REPORT ON CLOSURE ACTIVITIES
SPENT PICKLE LIQUOR TANKS AND CONTAINMENT AREA
98-INCH PICKLING LINE

LTV STEEL, CLEVELAND WORKS EAST
CLEVELAND, OHIO

(EPA ID No. OHD004218673)

NOVEMBER 1988

BURGESS & NIPLE, LIMITED
Engineers and Architects
5085 Reed Road
Columbus, Ohio 43220

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1.0 INTRODUCTION

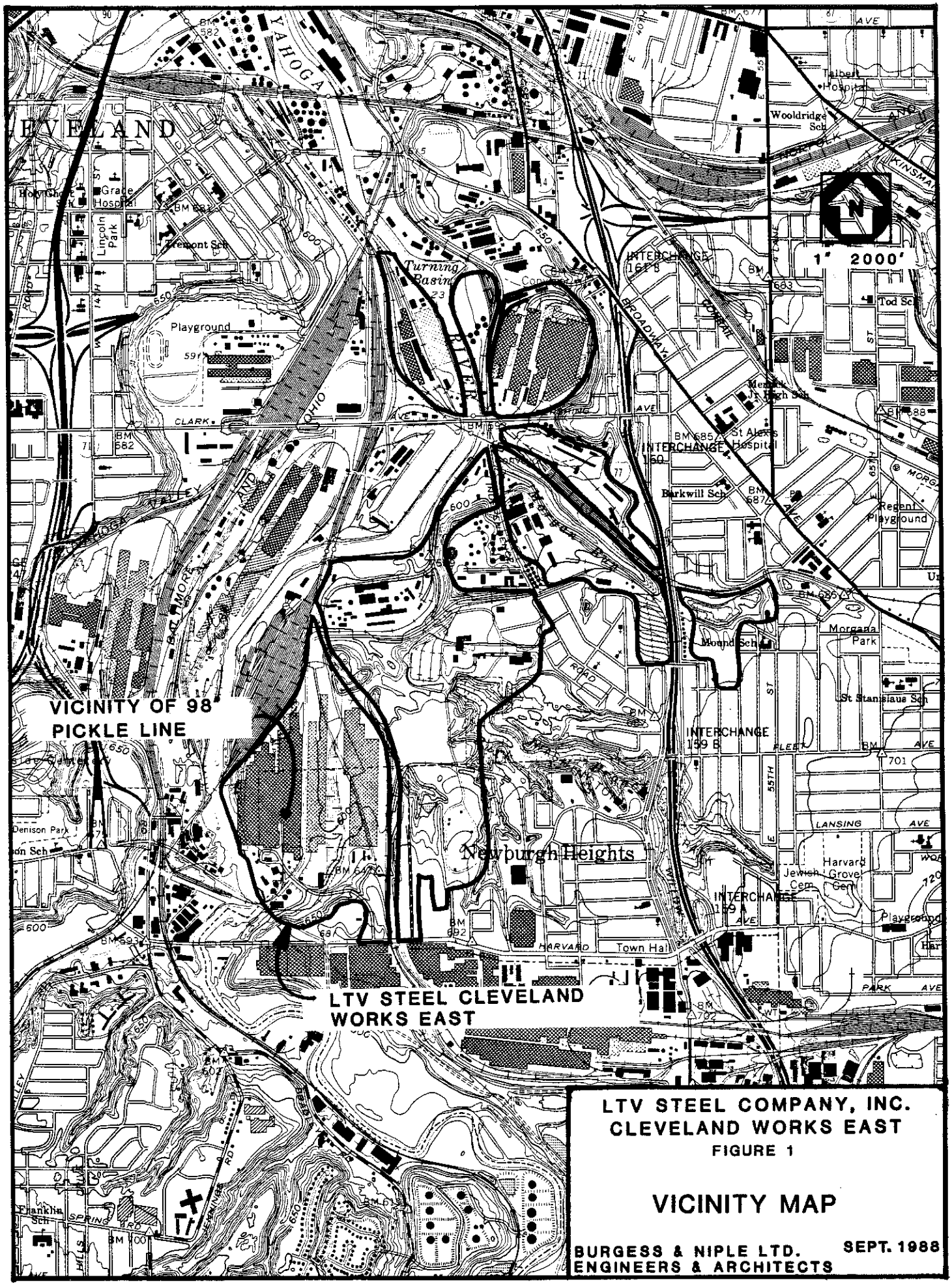
The LTV Steel Company, Inc. (LTV Steel) owns and operates a steel mill on approximately 750 acres in Cleveland, Ohio called Cleveland Works East as located on Figure 1. Cleveland Works East produces flat rolled steel. Manufacturing facilities include the following: hot and cold mills, blast furnaces, coke plants, basic oxygen furnaces, hydrochloric acid (HCl) pickling, and associated finishing and shipping facilities.

LTV Steel Cleveland Works East is permitted for spent pickle liquor (SPL) storage units (process code SO2) under federal and state regulations. The U.S. Environmental Protection Agency (U.S. EPA) permit I.D. number is OHD 0042186732 and HWFAB permit number is 02-18-0186.

On April 28, 1986, LTV Steel submitted a closure plan for the three storage tanks at the 98-inch pickle line (process code SO2) since the tanks were no longer used for storage of SPL. On November 4, 1986, the Ohio Environmental Protection Agency (Ohio EPA) requested additional information and a revised closure plan. The closure plan for the 98-inch pickle line storage facilities was resubmitted in January 1987 in response to the Agency's request.

The Ohio EPA responded to the closure plan on August 19, 1987, after a public comment period. The closure plan was conditionally approved. Ohio EPA additionally required a visual inspection to determine structural integrity of the tanks and containment area. The response also indicated that the U.S. EPA would also need to approve the plan and closure activities.

A visual inspection of the tanks and containment area was conducted by LTV corporate and plant environmental engineers on August 28, 1987. No deterioration of the concrete floor or wall of the containment area was identified. Several small cracks in the protective coating were noticed on the walls and the protective coating on the floor in the northwest corner had



LTV STEEL COMPANY, INC.
CLEVELAND WORKS EAST
FIGURE 1

VICINITY MAP

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ENGINEERS & ARCHITECTS

SEPT. 1988

broken away. Again, there were no signs of deterioration of the concrete beneath the protective coating. The development of the cracks was thought to have occurred after the 98-inch pickling line had been idled in 1984.

The inspection of the tanks showed metal deterioration on the ends of the tank support beams and separation of the protective coatings had occurred. However, there were no signs of leakage from the tanks and the concrete below the tanks showed no signs of deterioration. The complete inspection report is contained in Appendix A.

The U.S. EPA conditionally approved the closure plan on June 9, 1988. U.S. EPA required the addition of several items to the plan. First, the composite sample from the rinse water of the containment area must be derived from four grab samples. Second, decontamination of the pipes, tanks, and containment area shall be considered adequate if concentrations of chromium and lead in the final rinsate do not exceed concentrations of those constituents in the clean rinse water. Third, the pH of the final rinsate must be between 6 and 9.

Based on a closure plan dated January 1987 and subsequent revisions to the plan (see Appendix A) by the Ohio EPA and U.S. EPA, fieldwork of the closure activities began on August 23, 1988. Cleaning of the tanks and containment areas was completed on September 15, 1988. The piping and valves were cleaned and final rinse water collected between October 17 and October 20, 1988.

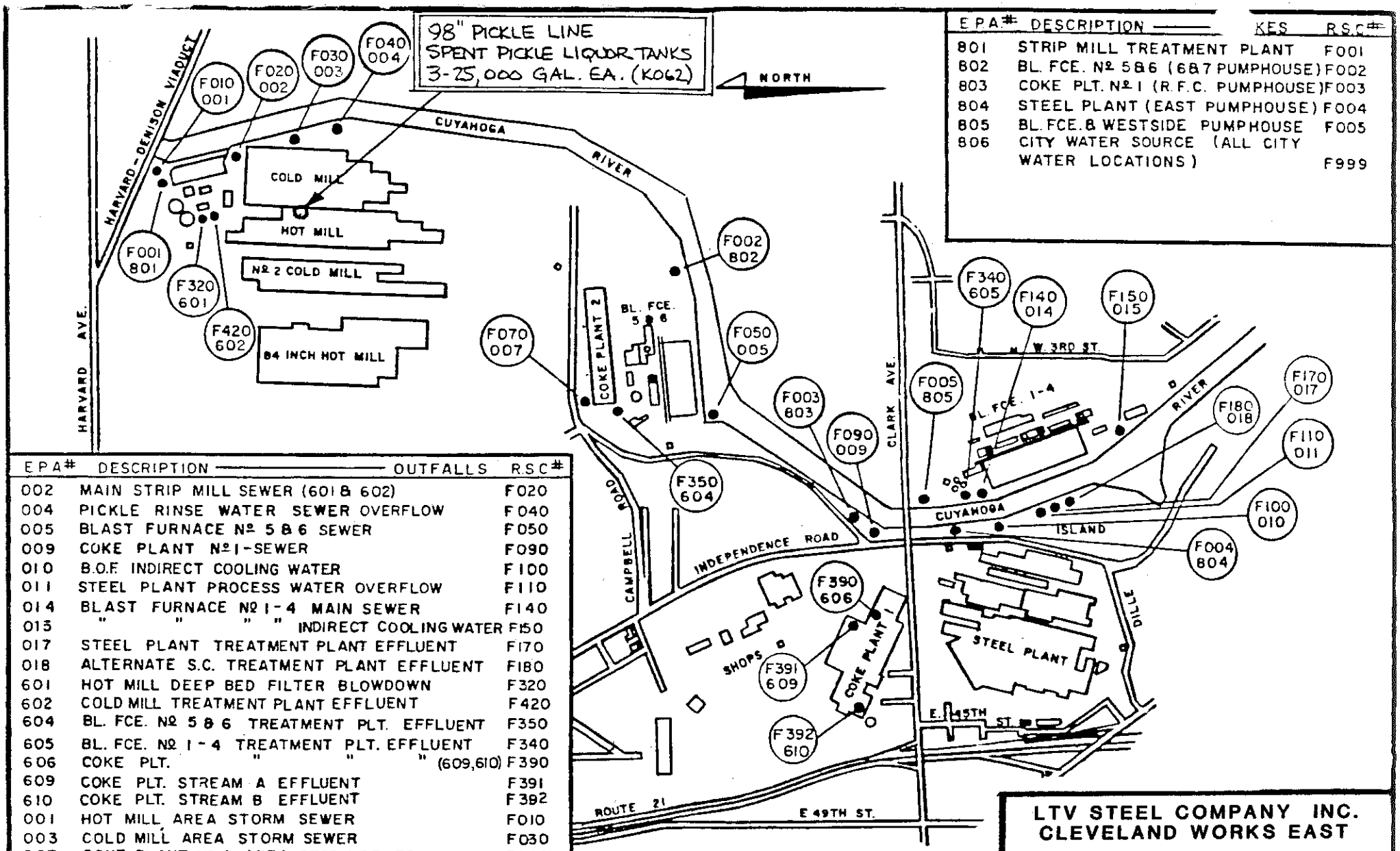
2.0 98-INCH PICKLE LINE DESCRIPTION

LTV Steel Cleveland Works East is an integrated steel mill with several manufacturing operations including a decommissioned 98-inch pickle line. Location of the 98-inch pickle line storage tanks is shown on Figure 2, Partial Plant Layout.

Three rubber-lined steel tanks, each with a capacity of 25,000 gallons, were utilized to store hydrochloric acid SPL. The maximum potential storage capacity was 75,000 gallons. The three tanks (process code SO2) were used to store SPL (hazardous waste No. K062) and were operated under federal and state regulations.

The tanks are mounted on a sealed and coated diked concrete pad within a roofed building. A schematic of the storage tanks and dike is shown on Figure 3. The pumps for pumping SPL from the tanks are mounted in a sealed concrete pad and dike as shown on Figure 3.

The 98-inch pickle line was idled in July 1984. All SPL was removed from the tanks in 1985 and the piping and tanks flushed.



EPA#	DESCRIPTION	KES R.S.C#
801	STRIP MILL TREATMENT PLANT	F001
802	BL. FCE. Nº 5&6 (6&7 PUMPHOUSE)	F002
803	COKE PLT. Nº 1 (R.F.C. PUMPHOUSE)	F003
804	STEEL PLANT (EAST PUMPHOUSE)	F004
805	BL. FCE. & WESTSIDE PUMPHOUSE	F005
806	CITY WATER SOURCE (ALL CITY WATER LOCATIONS)	F999

EPA#	DESCRIPTION — OUTFALLS	R.S.C#
002	MAIN STRIP MILL SEWER (601 & 602)	F020
004	PICKLE RINSE WATER SEWER OVERFLOW	F040
005	BLAST FURNACE Nº 5 & 6 SEWER	F050
009	COKE PLANT Nº 1-SEWER	F090
010	B.O.F. INDIRECT COOLING WATER	F100
011	STEEL PLANT PROCESS WATER OVERFLOW	F110
014	BLAST FURNACE Nº 1-4 MAIN SEWER	F140
015	" " " " INDIRECT COOLING WATER	F150
017	STEEL PLANT TREATMENT PLANT EFFLUENT	F170
018	ALTERNATE S.C. TREATMENT PLANT EFFLUENT	F180
601	HOT MILL DEEP BED FILTER BLOWDOWN	F320
602	COLD MILL TREATMENT PLANT EFFLUENT	F420
604	BL. FCE. Nº 5 & 6 TREATMENT PLT. EFFLUENT	F350
605	BL. FCE. Nº 1-4 TREATMENT PLT. EFFLUENT	F340
606	COKE PLT. " " " (609,610)	F390
609	COKE PLT. STREAM A EFFLUENT	F391
610	COKE PLT. STREAM B EFFLUENT	F392
001	HOT MILL AREA STORM SEWER	F010
003	COLD MILL AREA STORM SEWER	F030
007	COKE PLANT Nº 2 AREA STORM SEWER	F070

M-1136-B

LTV STEEL COMPANY INC.
CLEVELAND WORKS EAST

FIGURE 2

PARTIAL PLANT LAYOUT

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3.0 SPL TANK AND CONTAINMENT AREA CLOSURE PROCEDURES

3.1 General

LTV Steel closed three SPL storage tanks including pipelines and fittings for the 98-inch pickle line. Since the pickle line was idled in 1984, the storage tanks have not been used and will not be used in the future. Upon closure approval, the tanks will be removed for future plant development.

The closure procedure was conducted in accordance with Section 3745-66-11 of the Ohio Administrative Code (OAC) and 40 CFR Part 265 of the U.S. EPA. A hazardous waste facility must be closed in a manner that minimizes the need for further maintenance and to control, minimize, or eliminate post-closure escape of hazardous waste, hazardous constituents, leachate, or contaminated rainfall to the groundwater, surface water, or air.

The three SPL storage tanks were constructed of rubber-lined steel and placed on a diked concrete pad in an enclosed building. The tanks were not exposed to rain and were in good structural condition except as previously noted.

The sealed and coated concrete dike and pad provided secondary containment for a potential release of SPL from the storage tanks in the unlikely event of overfill or a leak. Even if a release from a tank through the rubber lining had occurred, the released material would have been contained by the dike and concrete flooring. The chance of a release of potential hazardous constituents from a contained spill through the concrete to the environment is considered remote.

The closure performance standard to provide adequate protection to human health and the environment is removal of the hazardous waste, SPL, from the tanks and decontamination of the tanks, associated piping, and containment structures.

Closure activities followed the closure plan as approved except in the following areas:

A. All inlet pipes were removed completely, cut in a maximum of 10-foot sections, and cut longitudinally. The fittings and flanges were also removed to facilitate cleaning.

B. Two storage tanks and containment dikes were initially rinsed with a high pressure fire hose and scraped where needed followed by a brush scrubbing with a weak alkaline solution. Two to four rinses followed the brush scrubbing before collection of the final rinse water for analysis.

3.2 Pipe Removal, Decontamination, and Disposition

Approximately 2,000 feet of 8-inch, 6-inch, and 4-inch fiberglass pipe was removed between the pickle liquor tanks and SPL storage tanks. It was decided that removal of these pipelines would allow a more thorough cleaning than cleaning in-place. Although the pipeline had been flushed upon the decommissioning of the pickling line, several low areas of the pipeline contained diluted SPL. This liquid was collected in chemically inert barrels and transported to the on-site wastewater treatment plant.

Each length of pipe removed was placed on a sheet of plastic within the secured hazardous waste area until several sections of pipe were cut. The pipe was further cut into a maximum of 10-foot sections and again cut longitudinally exposing the entire inner surface of the pipe. Although for the most part the pipe was free of SPL waste, some sludge remained in the low areas of the pipe. The sludge was removed and placed into lined drums for proper disposal.

The pipe and fittings were decontaminated to the cleanup standard by hand washing with a brush in a mild caustic and rinsing. Rinse water was returned to the wastewater treatment plant. A composite sample of the final rinse water was collected and sent to a laboratory for analysis. Following Environmental Protection Agency (EPA) acceptance of the analytical results of the rinse water, the metallic fittings will be recycled to the on-site basic oxygen furnace as steel scrap and the fiberglass pipe will be charged to the electric arc furnace as replacement carbon.

3.3 SPL Storage Tank Decontamination

The 98-inch mill was idled in July 1984. In November 1985, a maximum of 75,000 gallons of SPL were sent to a regeneration facility at LTV Steel's plant in Warren, Ohio. The tanks were then rinsed with water. Rinse water was sent to an on-site wastewater treatment plant at the strip mill operating under a National Pollutant Discharge Elimination System (NPDES) permit. The filling and pumping process continued until the pH of the rinse water was greater than 7.0 S.U. The three tanks remained empty until the spring of 1988 when a fire in a storage area above the tanks broke out and during the extinguishment of the fire, approximately 2 to 4 inches of water went into each storage tank. When cleaning of the tanks began in August 1988, approximately 1 1/2 inches of water remained in the tanks. The remaining water was removed and sent to the on-site wastewater treatment plant. The pH indicator strips showed a pH of between 6.0 and 6.5 for the standing water in the storage tanks.

The inside walls of the storage tanks contained a thin oily residue described by LTV Steel personnel as a steel coating oil carried over from the pickling line. The walls were scraped first with a thin rubber blade and the oily material put into a lined drum. Next, the walls of the tanks were cleaned with brushes with a caustic solution. The remaining oily residue was easily removed using this cleaning method. Two pressure rinses followed the wash. Finally, the tanks were filled with approximately 18 inches of clean rinse water for sampling.

3.4 Containment Dike, Flooring and Pump Decontamination

Debris from a decommissioned building and an earlier fire had built up in the bottom of the containment area. Since the storage tanks rested on 6-inch I beams, a void area exists beneath the tanks and, over the years, debris has also built up under the tanks. There were no signs that the tanks had overflowed, i.e., no staining of tanks, etc., but there was some evidence that the transfer pumps located between Tank 1 and Tank 2 (see Figure 3) may have had small leaks. Use of these particular pumps was discontinued sometime

prior to 1984 and replaced with the pumps in the smaller containment area. No deterioration of the concrete flooring, however, was evident beneath the pumps.

All the debris and sediment within the containment area was collected and placed in lined drums to await proper disposal. The outside of the tanks were flushed to remove debris on top and the sides. The areas beneath the tanks were also flushed using a fire hose with the collected sediments and fluids either placed in drums or sent to the strip mill wastewater treatment plant.

The large transfer pump, located between Tank 1 and Tank 2, was dismantled and the inside of the casing was cleaned using a caustic solution. The inside of the pump was lined with rubber and was in good condition. The remaining pumps were dismantled and placed in the roll-off container along with the fiberglass pipe, valves, and fittings.

The containment floors and walls, tank sides and supports, and remaining nonfluid piping (electrical and air lines), were scrubbed and cleaned over a period of 5 days using a mild caustic solution. A total of four flushings and rinses were used to clean up the outside of the tanks and containment areas. On September 15, 1988, a final inspection was made and samples were collected of the final rinse water. The samples were taken to the laboratory for analysis.

3.5 Sludge and Debris Disposal

Sludge and debris collected during closure activities in the piping, tank, and dike areas were placed in lined drums for disposal. Analysis of this material indicates it naturally meets pretreatment standards established in the final rules of the Land Disposal Restrictions for First Third Scheduled Wastes. Due to a high liquid content of the waste material, it was sent to a treatment facility in Michigan for proper landfill preparation. Chemical analysis and transportation documentation is included in Appendix C.

4.0 SAMPLING PROCEDURES

4.1 Tank Sampling

Preliminary samples of the rinse water from the storage tanks were collected and analyzed for pH and chromium at LTV Steel's laboratory during the cleaning and rinsing to determine the general degree of cleaning. When the required "clean" standards were met, each tank was filled with approximately 18 inches of water and a water sample collected. The sample was a composite of four grab samples.

The clean standards required the rinse water to have a pH between 6 and 9 and chromium and lead equal to the rinse water. The rinse water in this project was city water from Cleveland. A 100 milliliter (ml) plastic container was used to collect water for pH and a 250 ml glass container was used for the metals. Nitric acid was added to the contents in the glass container as a preservative.

4.2 Sampling of the Containment Area

The same procedure as previously described for the collection of water samples from the storage tanks was used within the diked area. The filling of the large containment area to a level of 16 inches took approximately 3 hours.

Again, a 100 ml plastic container was used to collect water for pH analysis and a 250 ml glass container used for collecting water samples for metal analysis. Four grab samples were collected and composited for each containment area. Nitric acid was added to the contents in the glass container as a preservative.

4.3 Pipe, Fittings, and Valve Sampling

After each piece of pipe and each valve and fitting were cleaned and rinsed, a water sample of the final rinse water was collected from a representative number of pieces that were randomly selected. Approximately 670 pieces were cleaned and 148 grab samples collected and composited. The

procedure required 4 days of cleaning. The containers designated for metal analysis were preserved with nitric acid. At the end of the 4 days, an equal volume of each day's sample was composited for analysis. A duplicate sample was also analyzed.

4.4 Additional Sampling

In addition to the previously described samples, eight samples were collected as rinse water, field duplicates, and field and trip blanks. Procedures for the collection of these samples were identical to the procedures used for the collection of samples taken at the tank and containment areas. Specific sample descriptions and results are identified in Table 1.

Table 1

Analytical Results of Rinse Water Samples
SPL Tank and Containment Area Closure
LTV Steel, Cleveland Works East

Burgess & Niple, Limited

Sample I.D.	Date Collected	Sample Description	pH S.U.	Cr (mg/l)[1]	Pb (mg/l)[1]
T-W2	09-02-88	Tank No. 1	7.9	ND[2]	ND
T-W3	09-06-88	Tank No. 2	7.8	ND	ND
T-W4	09-06-88	Tank No. 3	7.6	ND	ND
T-W5	09-15-88	Containment No. 1 (Large Diked Area)	5.8	ND	ND
T-W6	09-15-88	Containment No. 2 (Small Diked Area)	7.1	ND	ND
T-W7	09-02-88	Rinse Water - Cleveland City Water from Fire Hose	7.8	ND	ND
T-W8	09-06-88	Field Duplicate of TW-4	7.7	ND	ND
T-W9	09-02-88	Field Blank - Water from Wadsworth Lab	8.1	ND	ND
T-W10	09-02-88	Trip Blank - Prepared by Wadsworth Lab	8.2	ND	ND
T-W12	09-15-88	Field Blank 2nd Week, Water from B&N Lab	6.3	ND	ND
T-W13	09-15-88	Duplicate of TW-5	5.8	ND	ND
T-W14	09-15-88	Rinse Water - Sample During 2nd Week Activity	7.2	ND	ND
T-W15-1	10-20-88	Pipe, Valves, and Fittings	7.9	ND	ND
T-W15-2	10-20-88	Duplicate of T-W15-1	7.8	ND	ND
T-W16	10-19-88	Rinse Water - Cleveland City Water from 1-inch Hose	7.6	ND	ND

[1]Detection limit for metals = 0.05 milligrams per liter (mg/l)

[2]ND = None Detected

5.0 ANALYTICAL RESULTS

5.1 Laboratory Methods

Sample analysis procedures were conducted in accordance with the guidelines of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, Third Edition. For pH the specific procedure was SW-846, 9040; for chromium, SW-846, 7190; and lead, SW-846, 7420.

5.2 Quality Assurance/Quality Control (QA/QC)

The analytical QA/QC procedures were consistent with SW-846 procedures for spikes, recoveries, and duplicate runs. QA/QC documentation is contained in Appendix B.

5.3 Sample Handling

Each sample container was identified with the sample number, location, sampler, and date the sample was collected. Samples were stored in coolers packed with ice and delivered to the laboratory under chain-of-custody control. Chain-of-custody documentation is provided in Appendix B.

5.4 Laboratory Results

Table 1 lists the sample identification number, the location of each sample, the analytical result, and the date of collection. Based on the analytical results, the decontamination activities at this site are very favorable. None of the samples had detectable levels of total chromium or lead and pH levels ranged from 5.8 to 8.2 S.U.

The only deviation from the closure plan standards was pH in containment No. 1 (the large containment area). LTV Steel proposed a clean standard for pH between 6 and 9. The pH for the containment No. 1 area was slightly below 6, as can be seen in Table 1.

A number of factors affect pH concentrations and thus pH readings. Typically, pH values measured in the field differ from values in the laboratory. Obviously, equipment might have a direct bearing on results, however, holding time and reaction with ions within the sample also play a large part in variances within pH readings for a given sample.

As was previously mentioned, preliminary water samples were collected during the filling of the containment area and analyzed at LTV Steel's laboratory. Three color pH indicator strips were also used to determine if proper cleaning of the containment area had been achieved. In both tests, the last preliminary sample showed the water to have a pH of between 6.0 and 6.5. The tabletop Orion pH meter at the laboratory of LTV Steel was calibrated using a pH buffer of 7 which allows for an accurate reading of pH values in the middle pH range. The meter showed a pH value of 6.3 just prior to the collection of the water sample for official laboratory results. The pH indicator paper, not being as accurate, showed a pH of between 6.0 and 6.5.

After receiving the analytical results from the laboratory, Ms. Francine P. Norling of the U.S. EPA, Region V, was telephoned on September 26, 1988 to discuss the situation. Ms. Norling indicated that the critical test and standard for determining a "clean" facility was the reduction of metal concentrations. She further added that since the results for metal in this case was "none detected," a pH of 5.8 would be an acceptable level to consider the containment area closed (see Appendix A for a copy of telephone conversation notes).

Mr. Randy Meyer of the Ohio EPA, Columbus Office, on September 30, 1988, in a telephone conversation concurred with the U.S. EPA's assessment that a pH of 5.8 will be an acceptable clean level in light of the results of the metal analysis (see Appendix A for a copy of the telephone conversation notes).

After careful consideration and discussion with EPA officials and LTV Steel personnel related to this closure activity, it has been determined that all analytical results for the tanks and containment areas meet the intent of the standard proposed in the original plan.

6.0 ENGINEER'S CLOSURE STATEMENT AND CERTIFICATION

LTV Steel - Cleveland
98-Inch SPL Storage Tanks and Containment Areas
Closure Certification Statement

Burgess & Niple, Limited (B&N), Engineers and Architects, at the request of LTV Steel Cleveland Works East, prepared closure plans in April of 1986 for three SPL tanks and associated containment areas in their decommissioned 98-inch steel pickling line. The Ohio EPA requested additional information in November of 1986, and a revised closure plan was prepared and submitted in January 1987. The Ohio EPA conditionally approved the closure plan with additional requirements on August 19, 1987. The U.S. EPA conditionally approved the closure plan with additional requirements on June 9, 1988.

Removal of pipe and decontamination of the facilities began on August 23, 1988 and was completed on October 20, 1988. A representative of B&N was present during all critical phases of the work to verify proper procedures were followed. All waste solids and rinse waters were properly handled, documented, and disposed of. Specific sampling and analytical procedures including chain-of-custody and transportation manifests are documented in the accompanying report entitled "Report on Closure Activities Spent Pickle Liquor Tanks and Containment Area, 98-inch Pickling Line (November 1988)."

A final inspection of Tank No. 1 was made on September 2, 1988 when rinse water samples were collected. Tank Nos. 2 and 3 were inspected on September 6, 1988 and rinse water samples collected. Samples were collected and a final inspection was made on September 15, 1988 of the containment areas. The piping, valves, and pumps were cleaned and rinse water collected between October 17 and October 20, 1988. Results of all rinse water analyses were in compliance with U.S. EPA required standards for total chromium and lead since, in all cases, none of these parameters were detected. In one sample, the pH was slightly lower (5.8) than that proposed in the closure plan (6.0). However, it is within an acceptable range of analytical error, poses no potential source of contamination, and is not a substantial deviation to alter the decision concerning closure.

As specified in 40 CFR, Part 265, Subpart G, and in the Ohio Administrative Code Rule 3745-66-15, B&N verifies that the SPL tanks and containment areas have been closed in conformity and in accordance with the prepared closure plan and with the conclusions and analytical results contained in the "Report on Closure Activities."

Thomas D Ashton

Thomas D. Ashton, P.E.
Ohio No. E43114

Date 5 Dec 88

REPORT ON CLOSURE ACTIVITIES
SPL TANKS AND CONTAINMENT AREA
98-INCH PICKLING LINE

LTV STEEL-
CLEVELAND WORKS EAST

CLEVELAND, OHIO

NOVEMBER 1988

Burgess & Niple, Limited
Engineers and Architects
5085 Reed Road • Columbus, OH 43220 • (614) 459-2050

b&n 1912

7.0 OWNER'S CLOSURE STATEMENTS AND CERTIFICATIONS

LTV Steel Company, Inc., has prepared the following statements in regard to closure activities at the SPL tank at the 98-inch line.

7.1 Certification Statement

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons diectly responsible for gathering the information, the information submitted is to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Permit Appl. No. 02-18-0186

LTV Steel Company, Inc. - Cleveland East
Facility Name

W.G. Ackley
Signature of Executive Officer

Vice President - Flat Roll
Title

12/6/88
Date

7.2 **Owner Certification of Closure**

I, W. G. Wiley, Jr. (Owner or Operator) of LTV Steel Company, Inc. (Name and Address of Cleveland Works 98" mill SO2 unit Hazardous Waste Facility), hereby state and certify that, to the best of my knowledge and belief, the above named hazardous waste facility has been closed in accordance with the facility's closure plan, and that closure was completed on the 29th day of November, 1988.

W.G. Wiley
Signature

12/6/88
Date

APPENDIX A

OhioEPA
State of Ohio Environmental Protection Agency
P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

Toward A Cleaner Environment
15 Year Anniversary 1972 - 1987

Richard F. Celeste
Governor

CERTIFIED MAIL

August 19, 1987

Re: CLOSURE PLAN
LTV STEEL COMPANY
CLEVELAND WORKS (EAST)
OHD004218673, 02-18-0186

Mr. T.J. Harlan, Jr.
Corporate Environmental Department
LTV Steel Company
3100 East 45th Street
Cleveland, Ohio 44127

Dear Mr. Harlan:

On May 1, 1986, the LTV Steel Company submitted to Ohio EPA a closure plan for three (3) hazardous waste storage tanks located at the company's Cleveland Works (East), 3100 East 45th Street, Cleveland, Ohio. The hazardous waste management units are spent pickle liquor tanks at the 98 inch pickle line. Revisions to the closure plan were received on January 12, 1987. The closure plan was submitted pursuant to Rule 3745-66-12 of the Ohio Administrative Code (OAC) in order to demonstrate that the LTV Steel Company's proposal for closure complies with the requirements of OAC Rules 3745-66-11 and 3745-66-12.

The public was given the opportunity to submit written comments regarding the closure plan of the LTV Steel Company in accordance with OAC Rule 3745-66-12. No comments were received by Ohio EPA in this matter.

Based upon review of the company's submittal and subsequent revisions, I conclude that the closure plan for the hazardous waste facility at the LTV Steel Company meets the performance standard contained in OAC Rule 3745-66-11 and complies with the pertinent parts of OAC Rule 3745-66-12.

The closure plan submitted to Ohio EPA by the LTV Steel Company, Cleveland Works (East) is hereby approved with the following modification:

- The tanks and containment dike shall be visually inspected as described in the revised closure plan. If structural defects are discovered (cracks, fissures, etc.) which may have allowed a release of hazardous waste and hazardous constituents, LTV Steel Company shall inform the appropriate Ohio EPA Northeast District Office personnel immediately. Following this notification, LTV shall submit a plan for approval to assess the extent of the structural defects and determine the extent of any contamination resulting from the structural defects. This plan shall be submitted to the Ohio EPA within thirty (30) days of the notification referred to above.

I certify this to be a true and accurate copy of the official document as filed in the records of the Ohio Environmental Protection Agency.

By: [signature] Date 8/19/87

Ohio Environmental Protection Agency
ENTERED DIRECTOR'S JOURNAL
AUG 19 1987

Please be advised that approval of this closure plan does not release the LTV Steel Company from any responsibilities as required under the Hazardous and Solid Waste Amendments of 1984 regarding corrective action for all releases of hazardous waste or constituents from any solid waste management unit, regardless of the time at which waste was placed in the unit.

Due to the fact that the Ohio EPA is not currently authorized to conduct the federal hazardous waste program in Ohio, your closure plan also must be reviewed and approved by USEPA. Federal RCRA closure regulations (40 CFR 265.112) require that you submit a closure plan to George Hamper, Chief, Waste Management Division, Technical Programs Section, Ohio Unit, USEPA, Region V, 5HS-13, 230 South Dearborn Street, Chicago, Illinois 60604. Approval by both agencies is necessary prior to commencement of activities required by the approved closure plan.

You are notified that this action of the Director is final and may be appealed to the Environmental Board of Review pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with the Environmental Board of Review within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency and the Environmental Enforcement Section of the Office of the Attorney General within three (3) days of filing with the Board. An appeal may be filed with the Environmental Board of Review at the following address: Environmental Board of Review, 236 East Town Street, Room 300, Columbus, Ohio 43266-0557.

When closure is completed, the Ohio Administrative Code Rule 3745-66-15 requires the owner or operator of a facility to submit to the Director of the Ohio EPA certification by the owner or operator and a registered professional engineer that the facility has been closed in accordance with the approved closure plan. The certification by the owner or operator should include the statement found in OAC 3745-50-42(D). These certifications should be submitted to: Ohio Environmental Protection Agency, Division of Solid and Hazardous Waste Management, Attn: Thomas Crepeau, Program Planning and Management Section, P.O. Box 1049, Columbus, Ohio 43266-0149.

Sincerely,

Richard L. Shank, Ph.D.
Director

Ohio Environmental Protection Agency
ENTERED DIRECTOR'S JOURNAL
AUG 19 1987

RLS/DF/ara

cc: Thomas Crepeau/DSHWM Central File, Ohio EPA
Rebecca Strom, USEPA, Region V
Kris Coder, Ohio EPA, NEDO

1370U

I certify this to be a true and accurate copy of the official document as filed in the records of the Ohio Environmental Protection Agency.

By: [signature] Date 8/19/87

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

5H-12

CERTIFIED MAIL #P707 061 654
RETURN RECEIPT REQUESTED

9 JUN 1988

T. J. Harlan, Jr.
Corporate Environmental Control
LTV Steel Company
3100 East 45th Street
Cleveland, Ohio 44127

RE: Partial Closure Plan
LTV Steel Company, Incorporated
Cleveland Works (East)
OHD 004 218 673

Dear Mr. Harlan:

This letter is in reference to the partial closure plan for 3 spent pickle liquor tanks located at the LTV Steel Cleveland Works (East) in Cleveland, Ohio. The closure plan for these units was submitted to the United States Environmental Protection Agency (U.S. EPA) and the Ohio Environmental Protection Agency (OEPA) in January 1987. The plan was public noticed by the OEPA in July 1987.

The OEPA approved the closure plan, subject to specific conditions, in a letter dated August 19, 1987. The U.S. EPA hereby approves the closure plan, as amended by the OEPA letter of August 19, 1987, provided that the following additional conditions are met:

1. The sampling procedures on Page 8, Section IV.A ("Sample Collection") shall be carried out as follows:

   ° Each composite sample of decontamination rinse solution referred to in this section shall be derived from at least 4 grab samples.

2. The decontamination or "clean" standard for the inlet pipes, tanks, and containment facilities stated on Pages 8 and 9 shall be revised as follows:

   ° The inlet pipes, tanks, and containment facilities will be considered adequately decontaminated if: a) concentrations of chromium and lead in samples of the final rinseate taken after cleaning out each pipe, tank, and diked area do not exceed concentrations of chromium and lead in the clean rinse solution used to decontaminate the tanks and associated structures. To establish this decontamination standard, a composite sample consisting of at least 4 grab samples shall be taken from the rinse solution before it is used for decontamination. This sample shall be analyzed for chromium and lead, using the test methods listed in Section IV.B of the closure plan; and b) pH of the rinse water is between 6 and 9. If analyses indicate that these limits are not met, all decontamination steps shall be repeated until the limits are met.

If LTV cannot achieve complete decontamination as described above after 3 rinsings of the tanks and associated structures, LTV may propose alternate levels of chromium and lead to be used to measure the completion of decontamination efforts. U.S. EPA shall review and approve such levels before LTV can certify clean closure. Such levels shall be proposed to U.S. EPA within 45 days of LTV's determination that such levels are needed.

Please be advised that approval of this closure plan does not release LTV Steel Company from any responsibilities as required under the Hazardous and Solid Waste Amendments of 1984, regarding corrective action for all releases of hazardous waste constituents from any solid waste management unit, regardless of the time at which waste was placed in such units.

Please contact Ms. Francine P. Norling of my staff, at (312) 886-6198, if you have any questions regarding the above.

Sincerely,

Basil G. Constantelos, Director
Waste Management Division

cc: L. A. Szuhay, LTV Company
Tom Crepeau, OEPA
Ed Kitchen, OEPA
Kris Coder, OEPA-NEDO

LTV Steel

DEPARTMENTAL CORRESPONDENCE

SUBJECT: DIKE INSPECTION
98" PICKLE LINE - SPL TANKS

DATE: September 14, 1987

TO: L. A. Szuhay
Corporate Environmental Control Department
Cleveland Works

NO.:

An inspection of the above subject dike was conducted on August 28, 1987 by T. J. Harlan (Environmental Management Engineer), T. M. Girdler (Environmental Engineer), W. S. Smuts, P.E. (Area Engineer) and me. The following observations were noted:

1. The dike wall showed evidence of cracks at six locations.

   a. South wall approximately 6 feet from east.

   b. North wall approximately 9 feet from east.

   c. Four locations on west wall, located near upright supports for structure above tanks.

   The cracks on the north and west walls were accessible for inspection on the outside of the dike. There was no evidence of leakage on the outside of the dike surfaces at these locations. There was no concrete deterioration. There was no evidence of leakage at any of these cracks on the inside of the dike. The protective coating was cracked but clean, with no sign of attack on the concrete behind the cracks. It appeared that the coating cracks occurred recently, possibly after this area was taken out of service.

2. The protective coating on the floor of the dike had been broken away from the concrete floor in the northwest corner, adjacent to a square sump hole. The concrete area under this coating was solid with no sign of deterioration or acid attack.

3. The two sumps each contained water and solids sediment in the bottom, appeared intact, as verified by their ability to retain the water without leakage. Metal framework from tops of sumps was badly deteriorated.

4. There was significant metal deterioration on the ends of the tank support beams with subsequent separation of the protective coating. However, the concrete floor underneath these areas was solid with no sign of deterioration.

5. Generally, the protective coating inside the dike area was in very good condition with no indication of failure except as noted above.

6. The diked area around the pumping system was intact and did not show any signs of compromise.

Please apply this information as required by the Ohio E.P.A. per their letter of August 19, 1987 (attached). Contact me if you have any questions or require any further information.

R. L. Nemeth
Superintendent
Environmental Control Department
Cleveland Works

RLN:db

Attachment

cc & attm.: T. J. Harlan
T. M. Girdler
W. S. Smuts
J. F. Bush
M. C. Skoronski
D. B. Joeright
P. McCollum
R. W. Spor
M. S. Wilcox
T. A. Zalenski
L. E. Larson

CONVERSATION RECORD

Job No. 7512 Job Name LTV Cleveland 98-Inch Closure Date October 3, 1988

By Sinisa Sirovica Sinisa Sirovica Time 10:00 a.m.

With Randy Meyer Ohio Environmental Protection Agency

[X] By Telephone [X] Incoming [X] Outgoing Telephone No. (614) 644-2956

[ ] Visit, Site _____ City _____

Regarding: pH reading of 5.8 in rinse water sample of large containment area.

Conversation Items: I informed Randy Meyer of all the rinse water analysis results and asked him if a pH reading of 5.8 was acceptable for Ohio Environmental Protection Agency as the closure plan calls for a pH range of 6-9. I also informed him that I had talked to the U.S. Environmental Protection Agency about this and that a pH of 5.8 was acceptable to them in view of the other analysis results. He agreed with the U.S. Environmental Protection Agency's decision and added that their approval did not have a pH clause. He also said that rounding up 5.8 would give 6.

Action Required:	Action Taken:

CONVERSATION RECORD

Job No. 7512 Job Name LTV - Cleveland East Date 9/26/88

By Sinisa Sirovica Sinisa Sirovica Time 10:40 a.m.

With Ms. Francine P. Norling of U.S. EPA

[X] By Telephone [X] Incoming [ ] Outgoing Telephone No. ( ) _____

[ ] Visit, Site _____ City _____

Regarding: Results of rinse water sample analysis for Containment No. 1. PH was 5.8 (required from closure plan is 6-9).

Conversation Items: I asked Ms. Norling whether a pH of 5.8 was acceptable since it was so close to 6 and in view of the fact that the metals were nondetected. She said that the metals were the crucial test of whether the facility was clean or not and that this result of 5.8 was acceptable. She said that the requirement of pH 6-9 was taken from our closure plan and was not put in by her in their closure plan approval letter.

Action Required:	Action Taken:

APPENDIX B

1938-1988
50 YEARS
WADSWORTH/ALERT
LABORATORIES, INC.
Sampling, testing, mobile labs
5405 E. Schaaf Rd./P.O. Box 31454/Cleveland, OH 44131/(216) 642-9151

ANALYTICAL REPORT

LTV Steel - 98" Line

W/A Project No. 6353

Presented to :

J. Scott Dailey

Burgess & Niple

WADSWORTH/ALERT LABORATORIES, INC.

Dale Mori
Project Manager

J. William Botimer
Laboratory Manager - Cleveland

November 8, 1988

CORPORATE AND LABORATORY: North Canton, Ohio (216) 497-9396
LABORATORY: Cleveland, Ohio (216) 642-9151
LABORATORY: Bartow, Florida (813) 533-2150
SOUTHEAST REGIONAL OFFICE: Lexington, South Carolina (803) 957-6590
24-HOUR ALERT LINE: (216) 497-9338

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 6353-34010
MATRIX : WATER

DATE RECEIVED: 10/20/88

SAMPLE ID : T-W15-2

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	10/20/88	7.8		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 6353-34010
MATRIX : WATER

DATE RECEIVED: 10/20/88

SAMPLE ID : T-W15-2

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	11/ 1/88	ND	0.05	mg/l
Lead	11/ 1/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 6353-34013
MATRIX : WATER

DATE RECEIVED: 10/20/88

SAMPLE ID : T-W16

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	10/20/88	7.6		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 6353-34013
MATRIX : WATER

DATE RECEIVED: 10/20/88

SAMPLE ID : T-W16

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	11/ 1/88	ND	0.05	mg/l
Lead	11/ 1/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 6353-34014
MATRIX : WATER

DATE RECEIVED: 10/20/88

SAMPLE ID : T-W15-1

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	10/20/88	7.9		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 6353-34014
MATRIX : WATER

DATE RECEIVED: 10/20/88

SAMPLE ID : T-W15-1

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	11/ 1/88	ND	0.05	mg/l
Lead	11/ 1/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

QUALITY CONTROL SECTION

WADSWORTH/ALERT
LABORATORIES, INC.

November 3, 1988

QUALITY CONTROL NARRATIVE

Wadsworth/ALERT Laboratories, Inc. received samples from Burgess & Niple on October 20th which were sampled on October 17th - 19th. One of the requested parameters was pH which has a maximum holding time of twenty-four hours from sampling to analysis. Because of the late arrival of the samples, we cannot accept responsibility for the holding time violation.

Opal Davis-Johnson
Quality Control Coordinator
Cleveland Laboratory

WADSWORTH/ALERT
LABORATORIES, INC.

MATRIX SPIKE DATA

LAB ID	PARAMETER	SPIKE PERCENT RECOVERY	SPK/DUP PERCENT RECOVERY	SPIKE MATRIX
881005	Chromium	128	119	LIQUID
	Lead	81	75	

WADSWORTH/ALERT
LABORATORIES, INC.

METALS
MATRIX SPIKE RECOVERY
CONTROL LIMITS

PARAMETER	WATER RECOVERY CONTROL LIMITS	SOLID RECOVERY CONTROL LIMITS
Aluminum	75-125	75-125
Antimony	57-102	46-113
Arsenic	21-121	32-142
Barium	54-136	52-123
Beryllium	85-132	74-143
Cadmium	90-113	51-126
Calcium	77-124	65-136
Chromium	59-139	61-143
Cobalt	75-125	75-125
Copper	89-106	82-108
Hexavalent Chrome	80-122	70-133
Iron	76-105	69-112
Lead	61-124	59-127
Lithium	83-143	68-158
Magnesium	76-120	65-131
Manganese	81-112	73-120
Mercury	76-131	58-139
Nickel	86-114	75-114
Potassium	77-113	68-122
Selenium	50-119	21-114
Silicon	75-125	75-125
Silver	73-116	53-123
Silver (EP Tox)	26-103	*
Sodium	86-112	80-119
Thallium	62-129	45-146
Zinc	68-162	77-130

* - Not Applicable

7/19/88

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Wadsworth/Alert Laboratories, Inc. **RECEIVING DATE** : 11/ 1/88
LABORATORY ID : 9088-91101
SAMPLE MATRIX : WATER

SAMPLE ID : INTRA-LAB BLANK , 11/1 /88

METALS ANALYTICAL BLANK REPORT

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Chromium	11/ 1/88	ND	0.05 mg/l
Lead	11/ 1/88	ND	0.05 mg/l

ND - NONE DETECTED

WADSWORTH/ALERT LABORATORIES

4101 SHUFFEL DRIVE N.W./NORTH CANTON, OHIO 44720
(216) 497-9396

Chain-of Custody Record

№ 10574

PROJ. NO.	PROJECT NAME/LOCATION	NO. OF CONTAINERS	PARAMETER	REMARKS
	LTV-STEEL 98"LINE CLEVELAND			

SAMPLERS: *(Signature)* J. Scott Dailey of Burgess & Niple, Ltd.

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	PH	* Chromium + Lead						REMARKS
T-W15a	10-17-88	3:20p	✓		PIPE CLEANING - 98" LINE	2	✓	✓						
T-W15b	10-18-88	3:30p	✓		PIPE CLEANING - 98" LINE	2	✓	✓						
T-W15c	10-18-88	3:35p	✓		PIPE CLEANING - 98" LINE	2	✓	✓						
T-W15d	10-19-88	2:35	✓		" " " "	2	✓	✓						
T-W16	10-19-88	2:50	✓		" " " "	2	✓	✓						
T-W15e	10-20-88	2:25	✓		" " " "	2	✓	✓						

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
J. Scott Dailey	10-20-88 3:11pm				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
			10/20 15:15	* TEST FOR TOTAL Cr and Pb - bottles preserved w/ Nitric acid QA/QC REQUIRED	

Distribution Original Accompanies Shipment. Copy returned with Report.

1938-1988
50 YEARS
WADSWORTH/ALERT
LABORATORIES, INC.
Sampling, testing, mobile labs
5405 E. Schaaf Rd./P.O. Box 31454/Cleveland, OH 44131/(216) 642-9151

ANALYTICAL REPORT

7512/LTV Steel-/Cleveland

W/A Project No. 5998

Presented to :

J. Scott Dailey

Burgess & Niple

WADSWORTH/ALERT LABORATORIES, INC.

Dale Mori
Project Manager

J. William Botimer
Laboratory Manager - Cleveland

October 5, 1988

CORPORATE AND LABORATORY: North Canton, Ohio (216) 497-9396
LABORATORY: Cleveland, Ohio (216) 642-9151
LABORATORY: Bartow, Florida (813) 533-2150
SOUTHEAST REGIONAL OFFICE: Lexington, South Carolina (803) 957-6590
24-HOUR ALERT LINE: (216) 497-9338

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32489
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W5

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/15/88	5.8		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32489
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W5

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/21- 9/22/88	ND	0.05	mg/l
Lead	9/21- 9/22/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32490
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W6

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/15/88	7.1		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32490
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W6

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/21- 9/22/88	ND	0.05	mg/l
Lead	9/21- 9/22/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32491
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W12

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/15/88	6.3		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32491
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W12

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/21- 9/22/88	ND	0.05	mg/l
Lead	9/21- 9/22/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32492
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W13

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/15/88	5.8		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32492
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W13

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/21- 9/22/88	ND	0.05	mg/l
Lead	9/21- 9/22/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32493
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W14

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/15/88	7.2		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5998-32493
MATRIX : LIQUID

DATE RECEIVED: 9/15/88

SAMPLE ID : T-W14

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/21- 9/22/88	ND	0.05	mg/l
Lead	9/21- 9/22/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

QUALITY CONTROL SECTION

WADSWORTH/ALERT
LABORATORIES, INC.

MATRIX SPIKE DATA

LAB ID	PARAMETER	SPIKE PERCENT RECOVERY	SPK/DUP PERCENT RECOVERY	SPIKE MATRIX
880919	Chromium	109	108	WATER
	Lead	100	100	

WADSWORTH/ALERT
LABORATORIES, INC.

METALS
MATRIX SPIKE RECOVERY
CONTROL LIMITS

PARAMETER	WATER RECOVERY CONTROL LIMITS	SOLID RECOVERY CONTROL LIMITS
Aluminum	75-125	75-125
Antimony	57-102	46-113
Arsenic	21-121	32-142
Barium	54-136	52-123
Beryllium	85-132	74-143
Cadmium	90-113	51-126
Calcium	77-124	65-136
Chromium	59-139	61-143
Cobalt	75-125	75-125
Copper	89-106	82-108
Hexavalent Chrome	80-122	70-133
Iron	76-105	69-112
Lead	61-124	59-127
Lithium	83-143	68-158
Magnesium	76-120	65-131
Manganese	81-112	73-120
Mercury	76-131	58-139
Nickel	86-114	75-114
Potassium	77-113	68-122
Selenium	50-119	21-114
Silicon	75-125	75-125
Silver	73-116	53-123
Silver (EP Tox)	26-103	*
Sodium	86-112	80-119
Thallium	62-129	45-146
Zinc	68-162	77-130

* - Not Applicable

7/19/88

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Wadsworth/Alert Laboratories, Inc. **RECEIVING DATE** : 9/21/88
LABORATORY ID : 9088-90921
SAMPLE MATRIX : WATER

SAMPLE ID : INTRA-LAB BLANK , 9 /21/88

METALS ANALYTICAL BLANK REPORT

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Chromium	9/21- 9/22/88	ND	0.05 mg/l
Lead	9/21- 9/22/88	ND	0.05 mg/l

ND - NONE DETECTED

WADSWORTH/ALERT LABORATORIES

4101 SHUFFEL DRIVE N.W./NORTH CANTON, OHIO 44720
(216) 497-9396

Chain-of Custody Record

№ 10648

PROJ. NO.	PROJECT NAME/LOCATION
7512	LTV STEEL CLEV. 98" LINE

SAMPLERS: *(Signature)* Scott Dailey

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	PARAMETER: pH	PARAMETER: METALS *	REMARKS
T-W5	9-15-88	12:10p.	✓		98' PICKLE LINE	2	✓	✓	
T-W6	9-15-88	12:30p	✓		" " "	2	✓	✓	
T-W12	9-15-88	11:50a	✓		" " "	2	✓	✓	
T-W13	9-15-88	12:10p	✓		" " "	2	✓	✓	
T-W14	9-15-88	12:20	✓		" " "	2	✓	✓	

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Scott Dailey	9-15-88 1:28	GS Howarth			
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
				* METALS - TEST FOR TOTAL Cr AND Pb. QA/QC REQUIRED	

Distribution Original Accompanies Shipment. Copy returned with Report.

1938-1988
50 YEARS
WADSWORTH/ALERT
LABORATORIES, INC.
Sampling, testing, mobile labs
5405 E. Schaaf Rd./P.O. Box 31454/Cleveland, OH 44131/(216) 642-9151

ANALYTICAL REPORT

Project No. 5913

Presented to :

J. Scott Dailey

Burgess & Niple

WADSWORTH/ALERT LABORATORIES, INC.

Dale Mori
Project Manager

J. William Botimer
Laboratory Manager - Cleveland

September 19, 1988

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5913-32171
MATRIX : WATER

DATE RECEIVED: 9/ 7/88

SAMPLE ID : T-W4 98" PICKLE LINE

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/ 7/88	7.6		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5913-32171
MATRIX : WATER

DATE RECEIVED: 9/ 7/88

SAMPLE ID : T-W4 98" PICKLE LINE

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/13- 9/15/88	ND	0.05	mg/l
Lead	9/13- 9/15/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5913-32172
MATRIX : WATER

DATE RECEIVED: 9/ 7/88

SAMPLE ID : T-W8 98" PICKLE LINE

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/ 7/88	7.7		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5913-32172
MATRIX : WATER

DATE RECEIVED: 9/ 7/88

SAMPLE ID : T-W8 98" PICKLE LINE

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/13- 9/15/88	ND	0.05	mg/l
Lead	9/13- 9/15/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5913-32173
MATRIX : WATER

DATE RECEIVED: 9/ 7/88

SAMPLE ID : T-W3 98" PICKLE LINE

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/ 7/88	7.8		su

NOTE: ND - (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5913-32173
MATRIX : WATER

DATE RECEIVED: 9/ 7/88

SAMPLE ID : T-W3 98" PICKLE LINE

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/13- 9/15/88	ND	0.05	mg/l
Lead	9/13- 9/15/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5913-32174
MATRIX : WATER

DATE RECEIVED: 9/ 7/88

SAMPLE ID : T-S1 98" PICKLE LINE DIKED AREA

METALS ANALYTICAL REPORT
TOXICITY CHARACTERISTIC LIST

Analysis performed in accordance with USEPA Toxic Characteristic Leachate Procedure

TCLP EXTRACTION DATE: 9/ 8/88

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/12- 9/17/88	ND	0.05	mg/l
Lead	9/12- 9/16/88	3.6	0.1	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5913-32175
MATRIX : WATER

DATE RECEIVED: 9/ 7/88

SAMPLE ID : T-S2 98" PICKLE LINE DIKED AREA

METALS ANALYTICAL REPORT
TOXICITY CHARACTERISTIC LIST

Analysis performed in accordance with USEPA Toxic Characteristic Leachate Procedure

TCLP EXTRACTION DATE: 9/ 8/88

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/12- 9/17/88	0.05	0.05	mg/l
Lead	9/12- 9/16/88	0.91	0.10	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5913-32176
MATRIX : N/A

DATE RECEIVED: 9/ 7/88

SAMPLE ID : TCLP BLANK

METALS ANALYTICAL REPORT
TOXICITY CHARACTERISTIC LIST

Analysis performed in accordance with USEPA Toxic Characteristic Leachate Procedure

TCLP EXTRACTION DATE: 9/ 8/88

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/12- 9/17/88	ND	0.05	mg/l
Lead	9/12- 9/16/88	ND	0.10	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

QUALITY CONTROL SECTION

WADSWORTH/ALERT
LABORATORIES, INC.

MATRIX SPIKE DATA

LAB ID	PARAMETER	SPIKE PERCENT RECOVERY	SPK/DUP PERCENT RECOVERY	SPIKE MATRIX
32172	Chromium	83	85	WATER
	Lead	104	105	

WADSWORTH/ALERT
LABORATORIES, INC.

METALS
MATRIX SPIKE RECOVERY
CONTROL LIMITS

PARAMETER	WATER RECOVERY CONTROL LIMITS	SOLID RECOVERY CONTROL LIMITS
Aluminum	75-125	75-125
Antimony	57-102	46-113
Arsenic	21-121	32-142
Barium	54-136	52-123
Beryllium	85-132	74-143
Cadmium	90-113	51-126
Calcium	77-124	65-136
Chromium	59-139	61-143
Cobalt	75-125	75-125
Copper	89-106	82-108
Hexavalent Chrome	80-122	70-133
Iron	76-105	69-112
Lead	61-124	59-127
Lithium	83-143	68-158
Magnesium	76-120	65-131
Manganese	81-112	73-120
Mercury	76-131	58-139
Nickel	86-114	75-114
Potassium	77-113	68-122
Selenium	50-119	21-114
Silicon	75-125	75-125
Silver	73-116	53-123
Silver (EP Tox)	26-103	*
Sodium	86-112	80-119
Thallium	62-129	45-146
Zinc	68-162	77-130

* - Not Applicable

7/19/88

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Wadsworth/Alert Laboratories, Inc. **RECEIVING DATE** : 9/13/88
LABORATORY ID : 9088-90913
SAMPLE MATRIX : WATER

SAMPLE ID : INTRA-LAB BLANK , 9 /13/88

METALS ANALYTICAL BLANK REPORT

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Chromium	9/13- 9/15/88	ND	0.05 mg/l
Lead	9/13- 9/15/88	ND	0.05 mg/l

ND - NONE DETECTED

WADSWORTH/ALERT LABORATORIES

4101 SHUFFEL DRIVE N.W./NORTH CANTON, OHIO 44720
(216) 497-9396

Chain-of Custody Record

№ 10661

PROJ. NO.	PROJECT NAME/LOCATION
7512	LTV-STEEL - CLEV. 98" LINE

SAMPLERS: *(Signature)* Scott Dailey — BURGESS & NIPLE, LTD.

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	PARAMETER: PH	PARAMETER: METALS #	REMARKS
T-W4	9-6-88	5:40p	✓		98" PICKLE LINE	2	✓	✓	
T-W8	9-6-88	5:40p	✓		98" PICKLE LINE	2	✓	✓	
T-W3	9-6-88	1:15p	✓		98" PICKLE LINE	2	✓	✓	
T-S1	9-7-88	9:15am	✓		98" PICKLELINE DIKED AREA	2		✓	Total Cr + Pb from TCLP
T-S2	9-7-88	9:15am	✓		" " " " "	2		✓	" " " " "

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Scott Dailey	9-7-88 12:15pm				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	

METALS - TEST FOR TOTAL Cr and Pb. QA/QC REQUIRED

Distribution Original Accompanies Shipment. Copy returned with Report.

1938-1988
50 YEARS
WADSWORTH/ALERT
LABORATORIES, INC.
Sampling, testing, mobile labs
5405 E. Schaaf Rd./P.O. Box 31454/Cleveland, OH 44131/(216) 642-9151

ANALYTICAL REPORT

Project No. 5884

Presented to :

J. Scott Dailey

Burgess & Niple

WADSWORTH/ALERT LABORATORIES, INC.

Dale Mori
Project Manager

J. William Botimer
Laboratory Manager - Cleveland

September 9, 1988

CORPORATE AND LABORATORY: North Canton, Ohio (216) 497-9396
LABORATORY: Cleveland, Ohio (216) 642-9151
LABORATORY: Bartow, Florida (813) 533-2150
SOUTHEAST REGIONAL OFFICE: Lexington, South Carolina (803) 957-6590
24-HOUR ALERT LINE: (216) 497-9338

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5884-32073
MATRIX : WATER

DATE RECEIVED: 9/ 2/88

SAMPLE ID : T-W7

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/ 7/88	7.8		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5884-32073
MATRIX : WATER

DATE RECEIVED: 9/ 2/88

SAMPLE ID : T-W7

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/ 6/88	ND	0.05	mg/l
Lead	9/ 6/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5884-32074
MATRIX : WATER

DATE RECEIVED: 9/ 2/88

SAMPLE ID : T-W2

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/ 7/88	7.9		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5884-32074
MATRIX : WATER

DATE RECEIVED: 9/ 2/88

SAMPLE ID : T-W2

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/ 6/88	ND	0.05	mg/l
Lead	9/ 6/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5884-32075
MATRIX : WATER

DATE RECEIVED: 9/ 2/88

SAMPLE ID : T-W10

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/ 7/88	8.2		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5884-32075
MATRIX : WATER

DATE RECEIVED: 9/ 2/88

SAMPLE ID : T-W10

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/ 6/88	ND	0.05	mg/l
Lead	9/ 6/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5884-32076
MATRIX : WATER

DATE RECEIVED: 9/ 2/88

SAMPLE ID : T-W9

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
pH	9/ 7/88	8.1		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Burgess & Niple
LAB #: 5884-32076
MATRIX : WATER

DATE RECEIVED: 9/ 2/88

SAMPLE ID : T-W9

METALS ANALYTICAL REPORT
SELECTED LIST

Total metals analysis results - as received

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chromium	9/ 6/88	ND	0.05	mg/l
Lead	9/ 6/88	ND	0.05	mg/l

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

QUALITY CONTROL SECTION

WADSWORTH/ALERT
LABORATORIES, INC.

MATRIX SPIKE DATA

LAB ID	PARAMETER	SPIKE PERCENT RECOVERY	SPK/DUP PERCENT RECOVERY	SPIKE MATRIX
880902	Chromium	103	102	WATER
	Lead	100	104	

WADSWORTH/ALERT
LABORATORIES, INC.

METALS
MATRIX SPIKE RECOVERY
CONTROL LIMITS

PARAMETER	WATER RECOVERY CONTROL LIMITS	SOLID RECOVERY CONTROL LIMITS
Aluminum	75-125	75-125
Antimony	57-102	46-113
Arsenic	21-121	32-142
Barium	54-136	52-123
Beryllium	85-132	74-143
Cadmium	90-113	51-126
Calcium	77-124	65-136
Chromium	59-139	61-143
Cobalt	75-125	75-125
Copper	89-106	82-108
Hexavalent Chrome	80-122	70-133
Iron	76-105	69-112
Lead	61-124	59-127
Lithium	83-143	68-158
Magnesium	76-120	65-131
Manganese	81-112	73-120
Mercury	76-131	58-139
Nickel	86-114	75-114
Potassium	77-113	68-122
Selenium	50-119	21-114
Silicon	75-125	75-125
Silver	73-116	53-123
Silver (EP Tox)	26-103	*
Sodium	86-112	80-119
Thallium	62-129	45-146
Zinc	68-162	77-130

* - Not Applicable

7/19/88

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Wadsworth/Alert Laboratories, Inc. **RECEIVING DATE** : 9/ 6/88
LABORATORY ID : 9088-90906
SAMPLE MATRIX : WATER

SAMPLE ID : INTRA-LAB BLANK , 9 /6 /88

METALS ANALYTICAL BLANK REPORT

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Chromium	9/ 6/88	ND	0.05 mg/l
Lead	9/ 6/88	ND	0.05 mg/l

ND - NONE DETECTED

WADSWORTH/ALERT LABORATORIES

4101 SHUFFEL DRIVE N.W./NORTH CANTON, OHIO 44720
(216) 497-9396

Chain-of Custody Record

№ 10672

PROJ. NO.	PROJECT NAME/LOCATION
7512	LTV STEEL CLEV. 98" LINE

SAMPLERS: *(Signature)* Scott Dailey - BURGESS & NIPLE LTD

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	PARAMETER: PH	PARAMETER: Metals *	REMARKS
T-W7	9-2-88	12:00p.	✓		98" PICKLE LINE.	2	✓	✓	
T-W2	9-2-88	12:12	✓		" " "	2	✓	✓	
T-W10	9-2-88	12:30	✓		" " "	2	✓	✓	
T-W9	9-2-88	12:48	✓		" " "	2	✓	✓	

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Scott Dailey	9-2-88 3:50pm				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)* Bill Bates	Date / Time 9-2-88 15:30	Remarks * Metals - test for Total Cr and Pb only	

Distribution Original Accompanies Shipment. Copy returned with Report.

Rec'd Hs 9-7-88

APPENDIX C

12. 05. 88 12:30 PM CHEM-MET WYANDOTE MI P02

DNR
MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR ☐

Required under authority of Act 64, P.A. 1979, as amended and Act 136, P.A. 1969.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, P.A. 1969.

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. O H D 0 0 4 2 1 8 6 7 3 — Manifest Document No. 5 9 0 5 9

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
LTV Steel Co., Inc. (Env. Control Dept.)
3100 E. 45 Street, Cleveland, Ohio 44127

A. State Manifest Document Number MI 1053059

B. State Generator's ID

4. Generator's Phone (216) 429-6371

5. Transporter 1 Company Name: Samsel Services Company

6. US EPA ID Number: O H D 0 1 7 8 3 1 4 8 8

C. State Transporter's ID

D. Transporter's Phone 216/861-3949

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Chem Met Services, Inc.
16550 Allen Rd.
Wyandotte, MI 48192

10. US EPA ID Number: M I D 0 9 6 9 6 3 1 9 4

G. State Facility's ID

H. Facility's Phone (313) 282-9250

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and HM ID NUMBER).	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.	N/H
a. X R.Q. Hazardous Waste Liquid, N.O.S. ORM-E NA9189 (K062)	26	D M	110180	P	K 0 6 2	H
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
Water/Soil/Scale contaminated with K062 waste.
Analysis No. LTV 67302

K. Handling Codes for Wastes Listed Above
a/ /
b/ /
c/ /
d/ /

15. Special Handling Instructions and Additional Information
Bill to: Samsel Services Co., 1948 Carter Rd., Cleveland, Ohio 44113

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR; If I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Stan Rihtar — Signature: Stan Rihtar — Date: Month Day Year 1 1 2 9 8 8

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Brian McConnell — Signature: Brian McConnell — Date: Month Day Year 1 1 2 9 8 8

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Kevin Beaina — Signature: Kevin Beaina — Date: Month Day Year 1 1 2 8 8

EPA Form 8700-22 (Rev. 9/86) To be mailed by Michigan DNR

GENERATOR

TRANSPORTER

DESIGNATED FACILITY

1938-1988
50 YEARS
WADSWORTH/ALERT
LABORATORIES, INC.
Sampling, testing, mobile labs
5405 E. Schaaf Rd./P.O. Box 31454/Cleveland, OH 44131/(216) 642-9151

ANALYTICAL REPORT

Project No. 6250

Presented to :

R. A. Lehman

Samsel Services

WADSWORTH/ALERT LABORATORIES, INC.

Dale Mori
Project Manager

J. William Botimer
Laboratory Manager - Cleveland

October 21, 1988

CORPORATE AND LABORATORY: North Canton, Ohio (216) 497-9396
LABORATORY: Cleveland, Ohio (216) 642-9151
LABORATORY: Bartow, Florida (813) 533-2150
SOUTHEAST REGIONAL OFFICE: Lexington, South Carolina (803) 957-6590
24 HOUR & SAT. USE (216) 497-9396

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Samsel Services
LAB #: 6250-33650
MATRIX : SLUDGE

DATE RECEIVED: 10/10/88

SAMPLE ID : 9164-1

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Chloride	10/18/88	15,000	630	mg/kg
Cyanide	10/12/88	0.2	0.1	mg/kg
pH	10/11/88	2.5		su
Sulfate	10/18/88	310	100	mg/kg

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Samsel Services
LAB #: 6250-33650
MATRIX : SLUDGE

DATE RECEIVED: 10/10/88

SAMPLE ID : 9164-1

METALS ANALYTICAL REPORT
SELECTED LIST

Leachate testing in accordance with USEPA Manual SW846 Method 1310

EP EXTRACTION DATE: 10/11/88

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Silver	10/13-10/20/88	ND	0.02	mg/l
Arsenic	10/13-10/17/88	ND	0.005	mg/l
Barium	10/13-10/20/88	1	0.20	mg/l
Cadmium	10/13-10/20/88	0.05	0.01	mg/l
Chromium	10/13-10/20/88	ND	0.05	mg/l
Hexavalent Chrome	10/13/88	ND	0.10	mg/l
Copper	10/13-10/20/88	2.3	0.02	mg/l
Mercury	10/13-10/17/88	ND	0.005	mg/l
Nickel	10/13-10/19/88	0.90	0.10	mg/l
Lead	10/13/88	0.37	0.10	mg/l
Selenium	10/13-10/17/88	ND	0.005	mg/l
Initial pH	10/11/88	2.9		su
Zinc	10/13-10/20/88	11	0.10	mg/l
Final pH	10/12/88	3.0		su

NOTE: ND (None Detected)

WADSWORTH/ALERT
LABORATORIES, INC.

COMPANY : Samsel Services
LAB #: 6403-34232
MATRIX : SOLID

DATE RECEIVED: 10/25/88

SAMPLE ID : 9164-1

METALS ANALYTICAL REPORT
TOXICITY CHARACTERISTIC LIST

Analysis performed in accordance with USEPA Toxic Characteristic Leachate Procedure

TCLP EXTRACTION DATE: 10/27/88

ELEMENT	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Silver	10/28/88	0.02	0.02	mg/l
Arsenic	10/31-11/ 1/88	ND	0.005	mg/l
Barium	10/28/88	0.92	0.20	mg/l
Cadmium	10/28/88	0.09	0.01	mg/l
Chromium	10/28/88	ND	0.05	mg/l
Mercury	10/28/88	ND	0.006	mg/l
Lead	10/28/88	0.14	0.10	mg/l
Selenium	10/31-11/ 1/88	ND	0.005	mg/l

NOTE: ND (None Detected)

"HARD-HAMMER" WASTES

LAND DISPOSAL RESTRICTION NOTIFICATION AND CERTIFICATION FORM

Generator Name: LTV STEEL Co., INC. Manifest Number: MI 53059

EPA ID Number: OHD 00421 8673 CWM Profile Number: _____

This form is submitted to CHEM MET SERVICES in accordance with 40 CFR Part 268, which restricts the land disposal of certain hazardous wastes. I have marked the appropriate space below to indicate how my waste must be managed to conform to the land disposal restrictions. (See reverse side for instructions on using this form.)

☐ **A. RESTRICTED WASTE REQUIRES TREATMENT**

I am the initial generator of one (or more) of the following hazardous wastes which I have circled. This waste must be treated to the applicable treatment standard(s) set forth at 40 CFR Part 268, Subpart D prior to land disposal: F006, K001, K004, K008, K015, K016, K018, K019, K020, K021, K022, K024, K025, K030, K036, K037, K044, K045, K046, K047, K060, K061, K062, K069, K083, K085, K087, K088, K100, K101, K102, K103, K104. (See reverse side for waste code descriptions and allowable treatment methods.)

☐ **B. RESTRICTED WASTE TREATED TO PERFORMANCE STANDARD**

The waste identified above has been treated in compliance with one or more of the applicable performance standard(s) specified in 40 CFR Part 268 Subpart D. Supporting data is available to be provided as requested by the receiving facility.

"I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based upon my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d) without dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment."

☐ **C. RESTRICTED WASTE SUBJECT TO VARIANCE**

The waste identified above is:

___ (1) One of the following wastes and subject to the land ban prohibitions on August 8, 1990: K048, K049, K050, K051, K052, and K071.
___ (2) Contaminated soil and debris for which the treatment standard is based on incineration and subject to the land disposal prohibition on August 8, 1990. (Soils and debris contaminated with K001, K083, K087, K101, K102, K015, K016, K018, K019, K020, K024, K030, K037).
___ (3) Subject to a case-by-case extension or no-migration petition which expires on _____.
___ (4) For wastes deemed for deep well injection, the following wastes are subject to the land ban prohibitions on August 8, 1990: K049, K050, K051, K052, K062, K071, and K104.

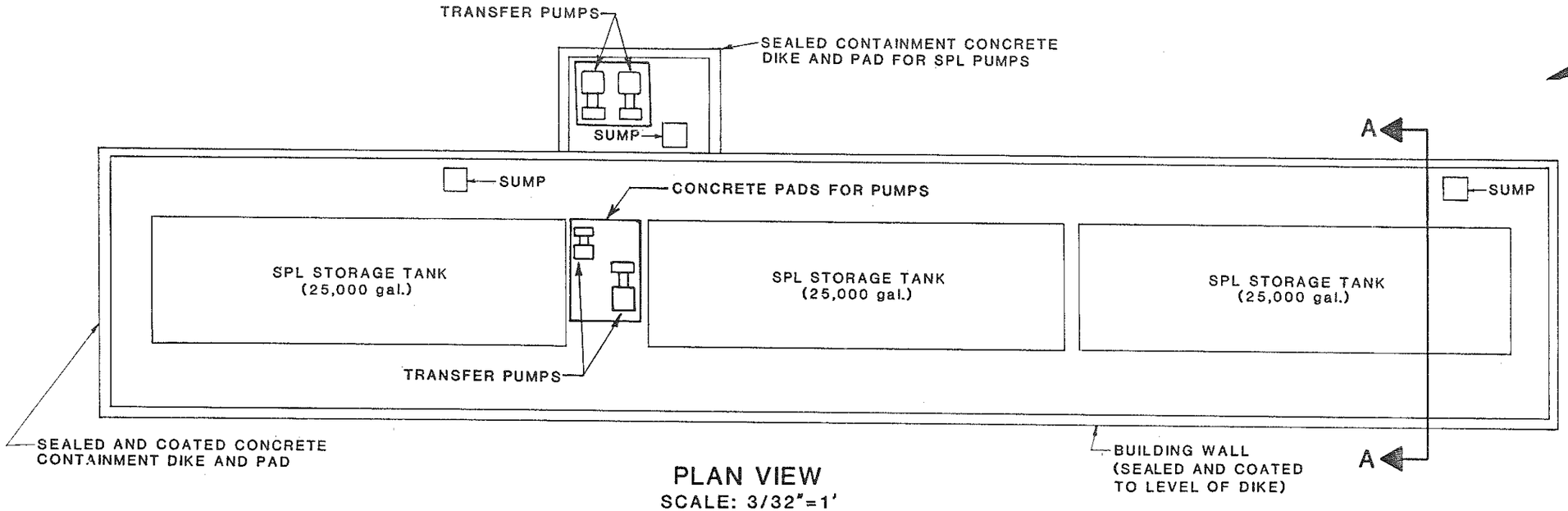
☒ **D. RESTRICTED WASTE NATURALLY MEETS THE TREATMENT STANDARDS**

The waste identified above naturally meets the performance standards of 40 CFR Part 268 Subpart D, without any treatment being performed.

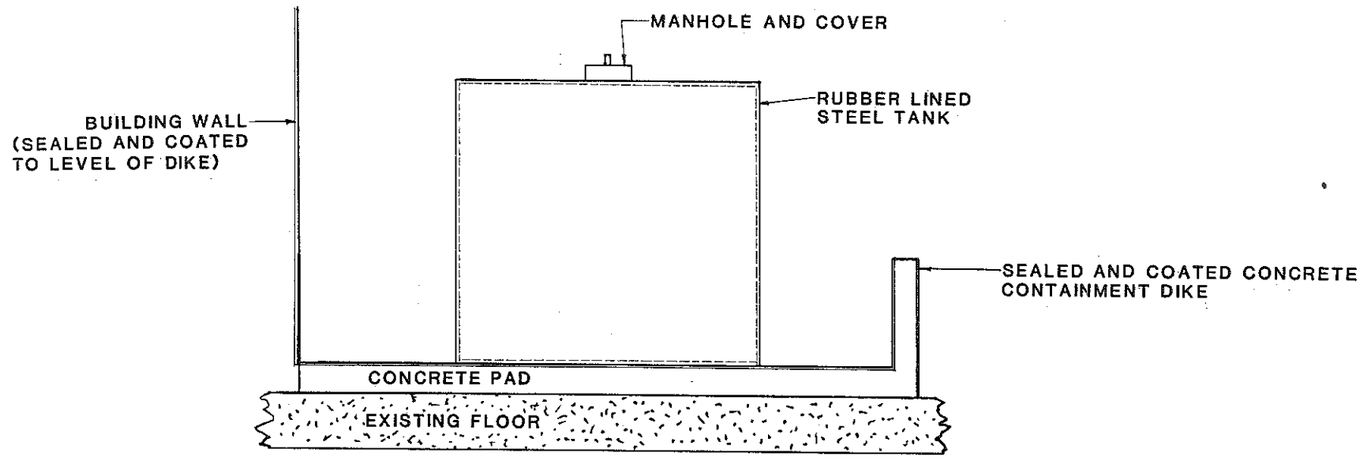
I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Subpart D. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

I hereby certify that all information submitted in this and all associated documents is complete and accurate to the best of my knowledge and information.

Signature A. Richter Title REGULATIONS SUPERVISOR Date 11/29/8



PLAN VIEW
SCALE: 3/32"=1'



SECTION A-A
SCALE: 3/16"-1'

REVISED SEPT. 1988

LTV STEEL COMPANY INC
CLEVELAND WORKS EAST

FIGURE 3

SCHEMATIC OF STORAGE TANKS AND CONTAINMENT FACILITIES

BURGESS & NIPLE, LTD.
ENGINEERS & ARCHITECTS

SEPT. 1988

CLOSURE PLAN FOR DEGREASER SLUDGE CONTAINER

CLEVELAND WORKS EAST
LTV STEEL COMPANY, INC.

(EPA I.D. NO. OHD004218673)

JUNE 1988

BURGESS & NIPLE, LIMITED
Engineers and Architects
5085 Reed Road
Columbus, OH 43220

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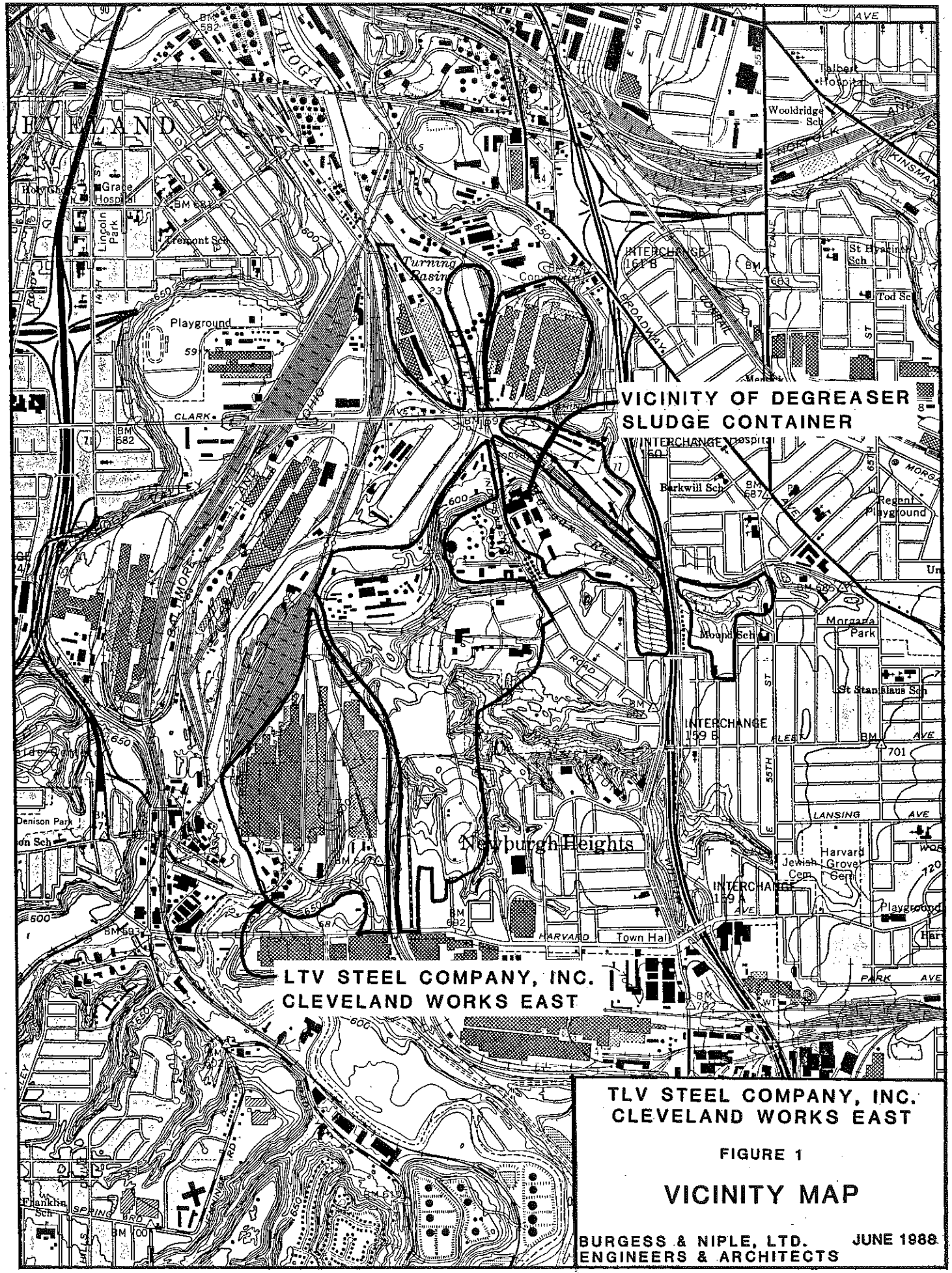
I. INTRODUCTION

The LTV Steel Company, Inc. (LTV Steel) owns and operates a steel mill on approximately 750 acres in Cleveland, Ohio called Cleveland Works East as located on Figure 1. Cleveland Works East produces flat rolled steel. Manufacturing facilities include the following: hot and cold mills, blast furnaces, coke plants, basic oxygen furnaces, hydrochloric acid pickling, and associated finishing and shipping facilities.

LTV Steel Cleveland Works East operates a tetrachloroethylene (also known as perchloroethylene or PCE) degreaser sludge container (Part A Application line item X-1, process code S01) under federal and state Resource Conservation and Recovery Act (RCRA) permits (EPA Identification No. OHD 004218673).

On April 28, 1986, LTV Steel notified the Ohio Environmental Protection Agency (Ohio EPA) of its intent to close the 529-gallon degreaser sludge container (process code S01) at the electric repair shop and convert to less than 90-day storage requirements under U.S. Environmental Protection Agency (U.S. EPA) Policy 121. U.S. EPA policy 121 was rescinded on May 23, 1986. Ohio EPA required an approvable closure plan that documents decontamination efforts for soils and subsoils at the degreaser sludge (hazardous waste No. F001) container. This Closure Plan has been prepared in response to the Agency's request. The Ohio EPA determined that full closure of the degreaser sludge container would not be required if LTV Steel would continue to use the container for less than 90-day storage. However, since LTV Steel intends to install a new container and pad, the existing container will be emptied and properly disposed.



TLV STEEL COMPANY, INC.
CLEVELAND WORKS EAST

FIGURE 1

VICINITY MAP

BURGESS & NIPLE, LTD.
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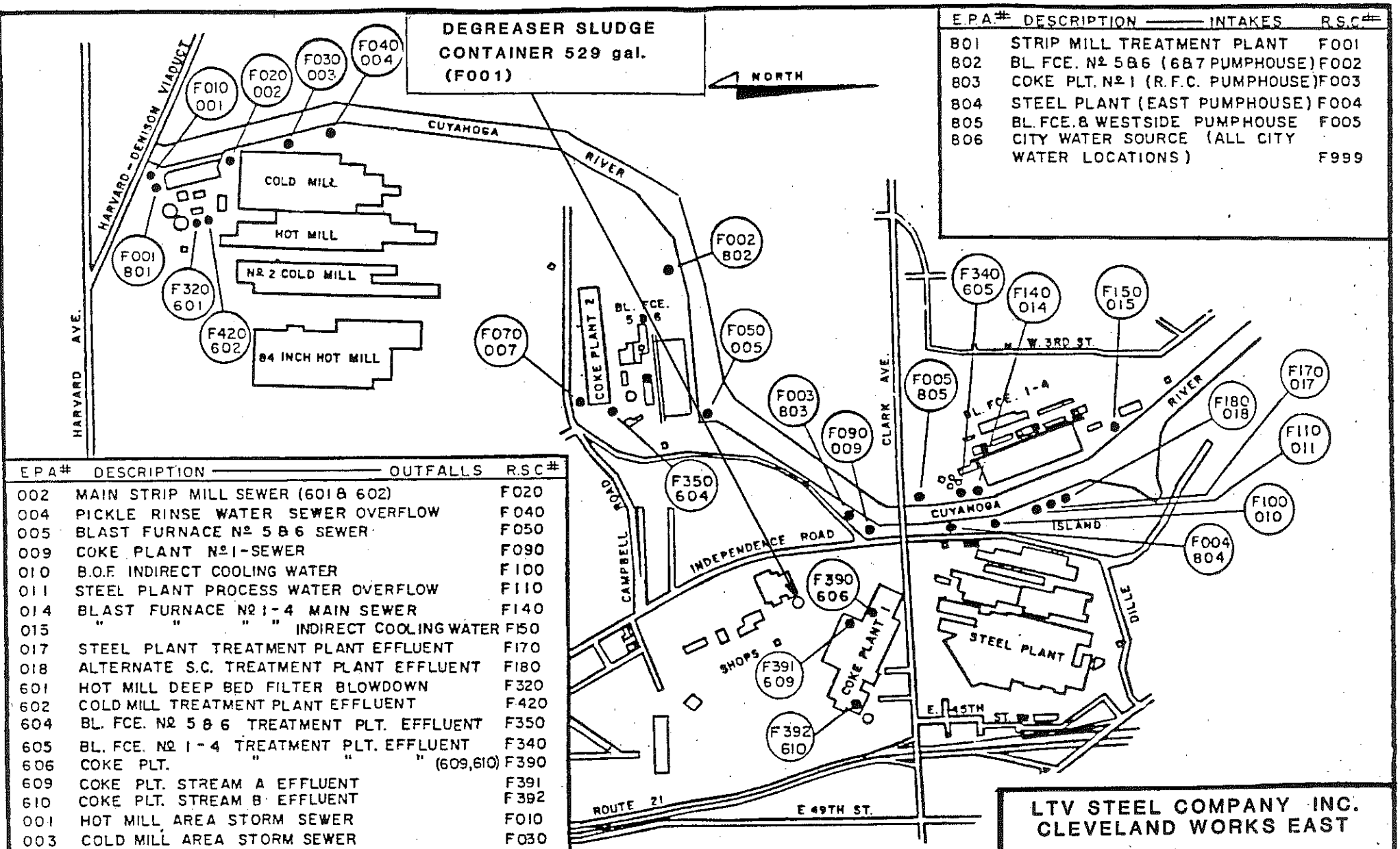
JUNE 1988

II. DESCRIPTON OF DEGREASER SLUDGE CONTAINER

LTV Steel Cleveland Works East (Figure 1) is an integrated steel mill with several manufacturing operations including a PCE degreaser and recovery still at the electric repair shop. A partial plant layout locating the electric repair shop is shown on Figure 2.

A 529-gallon steel container (Part A Application line item X-1, process code S01) was utilized to store degreaser sludge and degreaser still bottoms (hazardous waste No. F001).

A schematic of the degreaser sludge container is shown on Figure 3. The container is a steel dumpster placed on a gravel pad outside the electric repair shop.



EPA#	DESCRIPTION — INTAKES	R.S.C.#
801	STRIP MILL TREATMENT PLANT	F001
802	BL. FCE. Nº 5&6 (6&7 PUMPHOUSE)	F002
803	COKE PLT. Nº 1 (R.F.C. PUMPHOUSE)	F003
804	STEEL PLANT (EAST PUMPHOUSE)	F004
805	BL. FCE. & WESTSIDE PUMPHOUSE	F005
806	CITY WATER SOURCE (ALL CITY WATER LOCATIONS)	F999

EPA#	DESCRIPTION — OUTFALLS	R.S.C.#
002	MAIN STRIP MILL SEWER (601 & 602)	F020
004	PICKLE RINSE WATER SEWER OVERFLOW	F040
005	BLAST FURNACE Nº 5 & 6 SEWER	F050
009	COKE PLANT Nº 1 - SEWER	F090
010	B.O.F. INDIRECT COOLING WATER	F100
011	STEEL PLANT PROCESS WATER OVERFLOW	F110
014	BLAST FURNACE Nº 1-4 MAIN SEWER	F140
015	" " " " INDIRECT COOLING WATER	F150
017	STEEL PLANT TREATMENT PLANT EFFLUENT	F170
018	ALTERNATE S.C. TREATMENT PLANT EFFLUENT	F180
601	HOT MILL DEEP BED FILTER BLOWDOWN	F320
602	COLD MILL TREATMENT PLANT EFFLUENT	F420
604	BL. FCE. Nº 5 & 6 TREATMENT PLT. EFFLUENT	F350
605	BL. FCE. Nº 1 - 4 TREATMENT PLT. EFFLUENT	F340
606	COKE PLT. " " " (609,610)	F390
609	COKE PLT. STREAM A EFFLUENT	F391
610	COKE PLT. STREAM B EFFLUENT	F392
001	HOT MILL AREA STORM SEWER	F010
003	COLD MILL AREA STORM SEWER	F030
007	COKE PLANT Nº 2 AREA STORM SEWER	F070

M-1136-B

LTV STEEL COMPANY INC.
CLEVELAND WORKS EAST

FIGURE 2

PARTIAL PLANT LAYOUT

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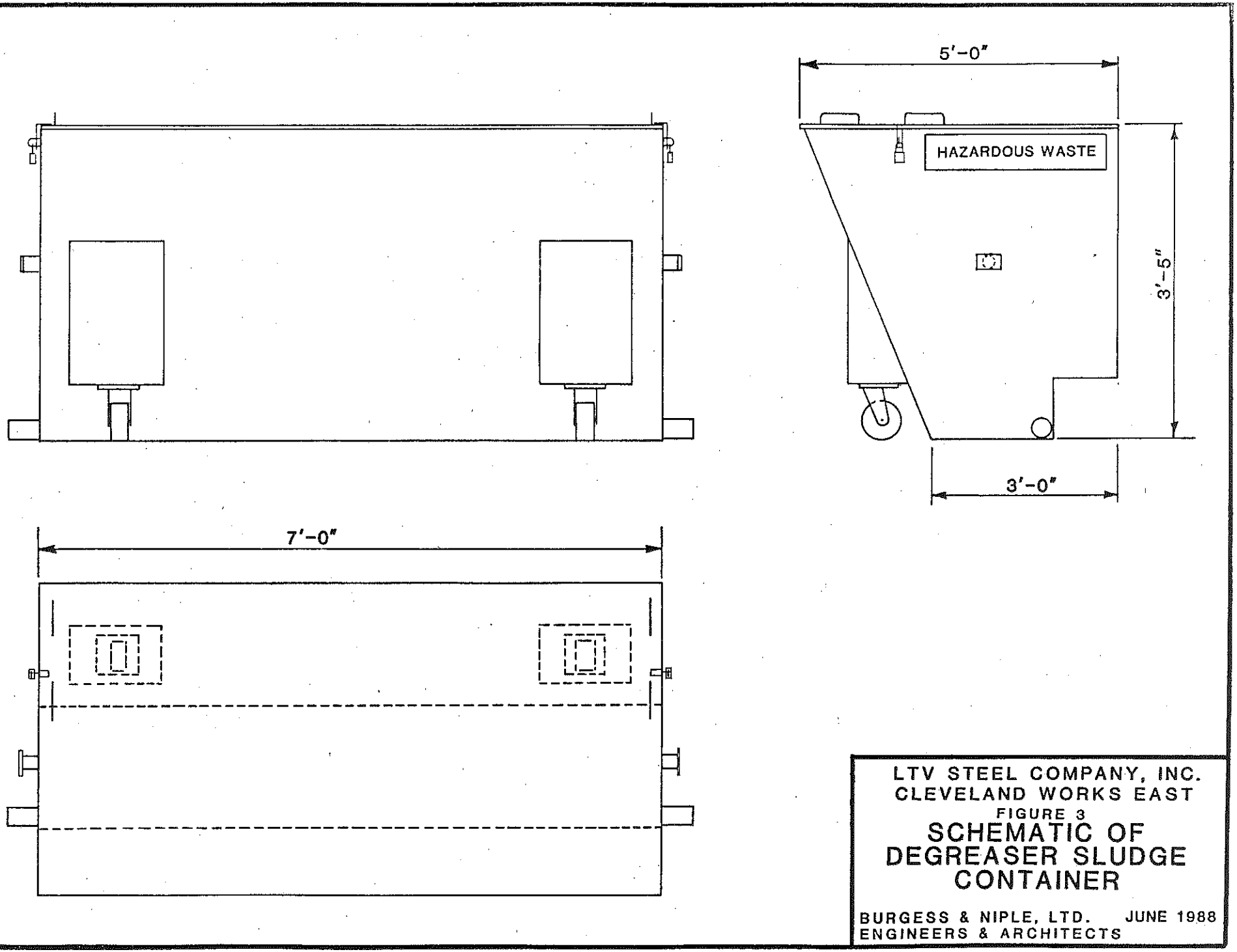

LTV STEEL COMPANY, INC.
CLEVELAND WORKS EAST

FIGURE 3

SCHEMATIC OF DEGREASER SLUDGE CONTAINER

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ENGINEERS & ARCHITECTS

III. CLOSURE PLAN

A. General

LTV Steel plans to empty and properly dispose of the degreaser sludge container at the electric repair shop. This closure plan establishes decontamination and closure activities, including certification, for the soils and subsoils in the vicinity of the degreaser sludge container.

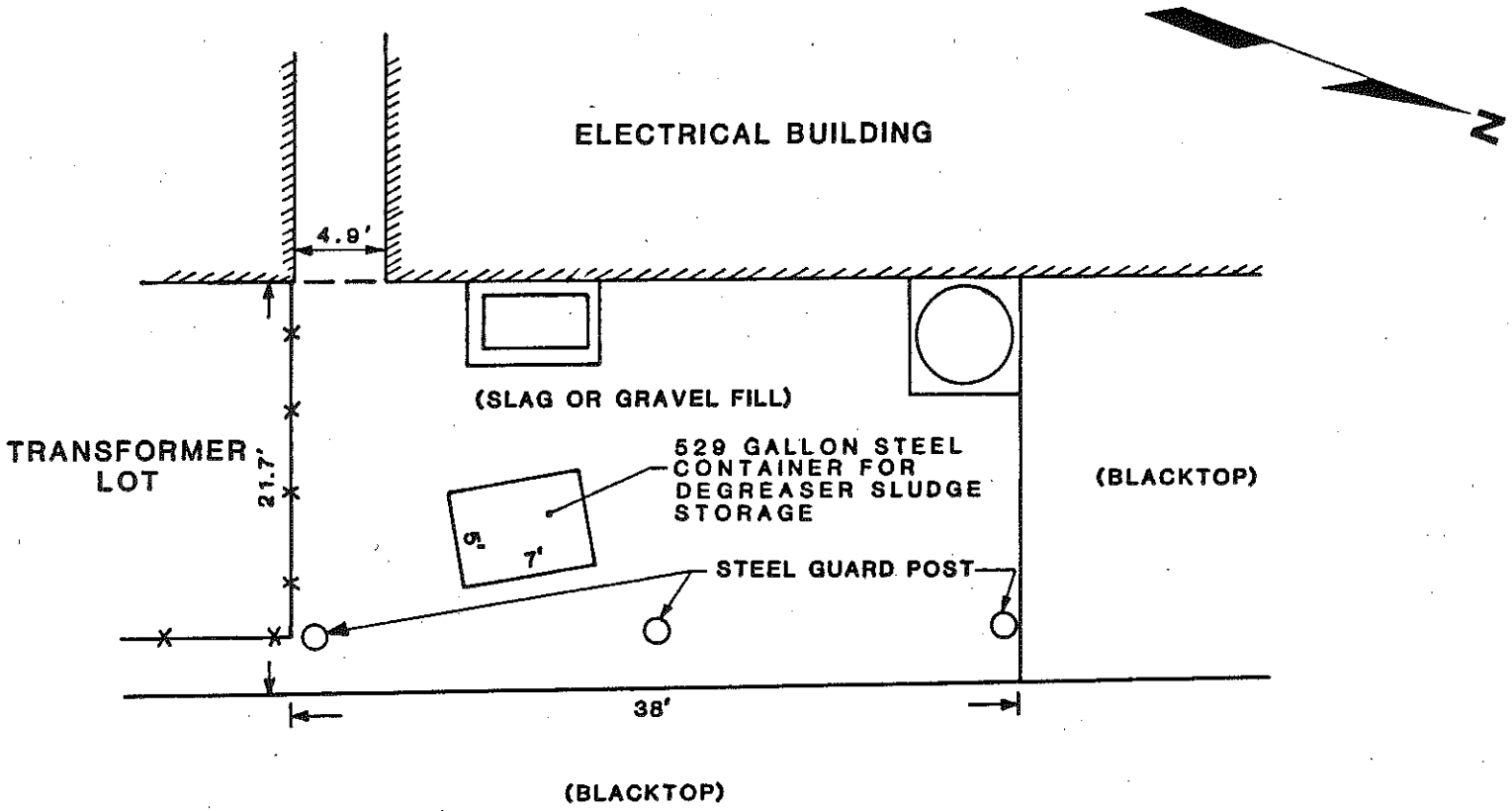
B. Closure Performance Standard

Section 3745-66-11 of the Ohio Administrative Code (OAC) states that a hazardous waste facility must be closed in a manner that minimizes the need for further maintenance and to control, minimize, or eliminate post-closure escape of hazardous waste, hazardous constituents, leachate or contaminated rainfall to the groundwater, surface water, or air. The clean level for PCE in soils and fill shall be below detection limits as required by SW 846 - Procedure 8010 and actual sample matrix analyzed. The closure performance standard required by Ohio EPA is the removal of soils or fill containing perchloroethylene (PCE) above the detection limits. No existing structures shall be disturbed or underexcavated. Any excavation shall be made with caution in regard to underground utilities. No excavation shall begin without the approval of the Plant Engineer in regard to whether or not the excavation is in conflict with any underground utilities.

C. Status of Facility After Closure

If contaminated soils or fill are removed, the excavations will be graded and filled with clean material. The storage container will be emptied and properly disposed.

LTV Steel intends to install a new container which will include a concrete pad. A new degreaser sludge container would be placed on the pad.



SCALE: 1"=10'

LTV STEEL COMPANY, INC.
CLEVELAND WORKS EAST

FIGURE 4

SCHEMATIC OF DEGREASER CONTAINER SITE

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JUNE 1988

IV. SAMPLING AND ANALYSIS PLAN

A. Collection

Two test pits will be dug with a backhoe in the vicinity of the degreaser sludge container. The test pits will be approximately 6 feet deep. A soil sample will be collected at a depth of 1 foot, 3 feet, and 6 feet from each pit with a stainless steel spoon. Each test pit will be characterized by three separate soil samples. A total of six samples shall be taken for laboratory analysis.

The bucket of the backhoe will be cleaned with a high pressure water spray following completion of each test pit to prevent cross-contamination. The locations of the test pits will be staked and the test pits will be backfilled after sample retrieval.

B. Analysis

Degreaser sludge and still bottoms (hazardous waste No. F001) are listed due to the toxicity of the degreasing solvent (PCE). The soil samples will be tested on a total basis for PCE. Analytical procedures will be in accordance with "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846 Method 8240.

Samples will be delivered to the laboratory in glass containers with teflon lined lids under chain-of-custody control.

Should PCE be detected, it will be assumed that a release has occurred. Additional sampling will then be proposed to determine the extent of contamination and if a remediation plan is necessary.

C. Quality Assurance/Quality Control (QA/QC)

The analytical QA/QC procedures will be consistent with SW-846 procedures for spikes, recoveries, and duplicate runs. QA/QC documentation will be provided along with the analytical results.

D. Sample Handling

Each sample container will be identified with a sample number, location, and initials of the sampler. All samples will be stored in coolers packed with ice. Samples will be delivered to the laboratory under chain-of-custody control. Chain-of-custody documentation for each sample will be prepared.

E. Equipment Decontamination

The backhoe shall be cleaned with a high pressure water spray upon completion of the test pits. All adhering soil material will be cleaned off the backhoe bucket. Cleaning materials shall be stored in drums and, if found to be from contaminated areas, the materials shall be managed and disposed of as a hazardous waste.

The stainless steel spoons will be placed in plastic bags and returned to the laboratory for decontamination.

V. HEALTH AND SAFETY PLAN

Prescribed safety and personnel protection procedures will be followed during sampling at the degreaser sludge container area. A work area will be established and only those individuals working directly on the container closure will be allowed access to the work area. No eating, drinking, or smoking will be permitted within the work area. A minimum of two individuals will be involved in all closure activities.

All personnel performing closure, sampling, or test pit activities shall wear the following Level D protective clothing:

Chemical resistant coveralls
Chemical resistant gloves
Work boots
Hard hat
Safety glasses with side shields.

Prior to leaving the work area, protective clothing shall be removed and disposed of or decontaminated. Workers shall immediately wash their hands and face after removing protective clothing.

Visitors shall not be allowed in the work area.

VI. CLOSURE SCHEDULE AND CERTIFICATION

The estimated schedule for closure of the soils at the degreaser sludge container is presented in Table 1. Closure activities will proceed only after all approvals are obtained. All closure activities will be completed in accordance with the approved Closure Plan within 180 days after all approvals of the Closure Plan.

Table 1

Estimated Closure Schedule
Degreaser Sludge Container Area
LTV Steel Cleveland Works East

Activity	Days 0	20	40	60	80	100	120	140	160	180
Closure plan approved	▲									
Sampling and analyses	———									
Disposal of any contaminated soils		———	———	———	———	———	———			
Confirmation sampling					———	———	———	———		
Closure certification									———	

An independent registered professional engineer and LTV Steel will certify that the area is closed in accordance with the approved closure plan. Certification will be submitted within 30 days after completion of closure.

VII. CLOSURE COST ESTIMATE

Estimated closure costs for the degreaser sludge container area are summarized in Table 2. The closure costs are based on 1989 dollars. The estimated costs for disposal of any contaminated soils or fill, confirmation sampling, and engineering services during remediation and confirmation sampling are not included in Table 2.

Table 2

Estimated Closure Costs
Degreaser Sludge Container Area
LTV Steel Cleveland Works East

Item	Quantity	Unit	Unit Price	Total Cost
Engineering services during initial sampling	-	l.s.	-	$ 6,000
Test pits (two)	-	l.s.		1,200
Lab analysis of soil samples	6	each	$ 300.00	1,800
Certification of closure	-	l.s.	-	2,500
Subtotal				$11,500
Contingency (10 percent)				1,200
Total				$12,700

APPENDIX

BURGESS & NIPLE, LIMITED
CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
SAMPLERS: (Signature)	

STA. NO.	DATE	TIME	COMP.	DISCR.	STATION LOCATION	TOTAL NO. OF CONTAINERS							REMARKS

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Lab by: (Signature)	Date/Time	Remarks:	
				Method of shipment:	

BURGESS & NIPLE, LTD.
ENGINEERS & ARCHITECTS

5085 REED RD. COLUMBUS, OHIO 43220
TELEPHONE: (614) 459-2050

CLOSURE PLAN FOR 60-INCH ELECTROPLATE SPL STORAGE TANK AREA

CLEVELAND WORKS EAST
LTV STEEL COMPANY, INC.

(EPA I.D. NO. OHD004218673)

JUNE 1988

BURGESS & NIPLE, LIMITED
Engineers and Architects
5085 Reed Road
Columbus, OH 43220

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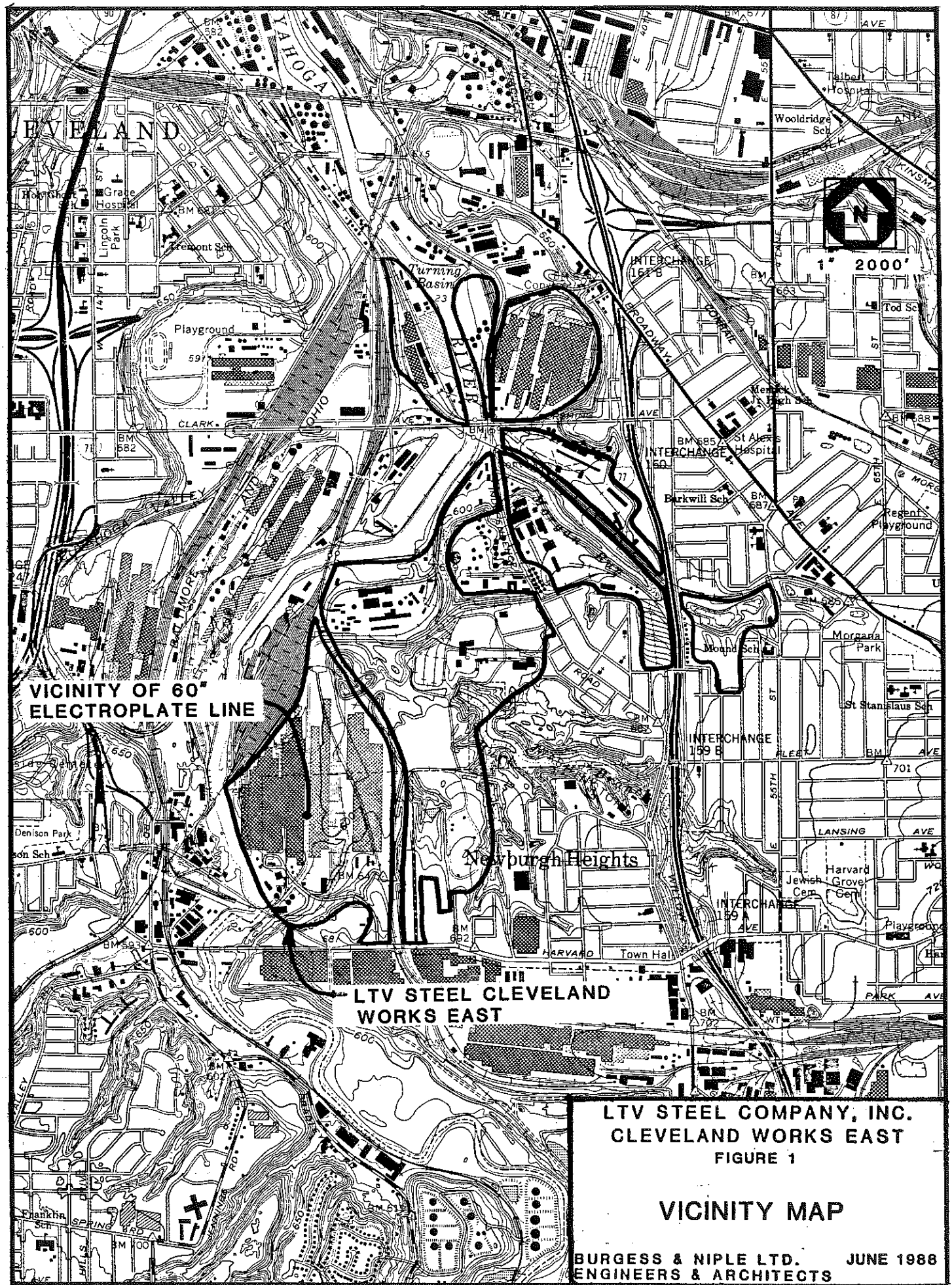
I. INTRODUCTION

The LTV Steel Company, Inc. (LTV Steel) owns and operates a steel mill on approximately 750 acres in Cleveland, Ohio called Cleveland Works East as located on Figure 1. Cleveland Works East produces flat rolled steel. Manufacturing facilities include the following: hot and cold mills, blast furnaces, coke plants, basic oxygen furnaces, hydrochloric acid (HCl) pickling, and associated finishing and shipping facilities.

LTV Steel Cleveland Works East operates several spent pickle liquor (SPL) storage facilities (Part A Application line item 1, process code S02) under federal and state Resource Conservation and Recovery Act (RCRA) permits (EPA Identification No. OHD 004218673).

On April 28, 1986, LTV Steel notified the Ohio Environmental Protection Agency (Ohio EPA) of its intent to close one 8,000-gallon and one 15,000-gallon storage tank (process code S02) at the 60-inch electroplate line and convert to less than 90 day storage requirements under U.S. Environmental Protection Agency (U.S. EPA) Policy 121. U.S. EPA policy was rescinded May 23, 1986; and Ohio EPA has required an approvable closure plan that documents decontamination efforts for dikes, sumps, trenches, soils, and subsoils at the 60-inch electroplate line SPL (hazardous waste No. K062) storage tank area. This Closure Plan has been prepared in response to the Agency's request. The Ohio EPA determined that full closure of the 60-inch SPL tanks will not be required since LTV Steel will continue to use them for less than 90 day storage of SPL.



LTV STEEL COMPANY, INC.
CLEVELAND WORKS EAST
FIGURE 1

VICINITY MAP

BURGESS & NIPLE LTD. JUNE 1988
ENGINEERS & ARCHITECTS

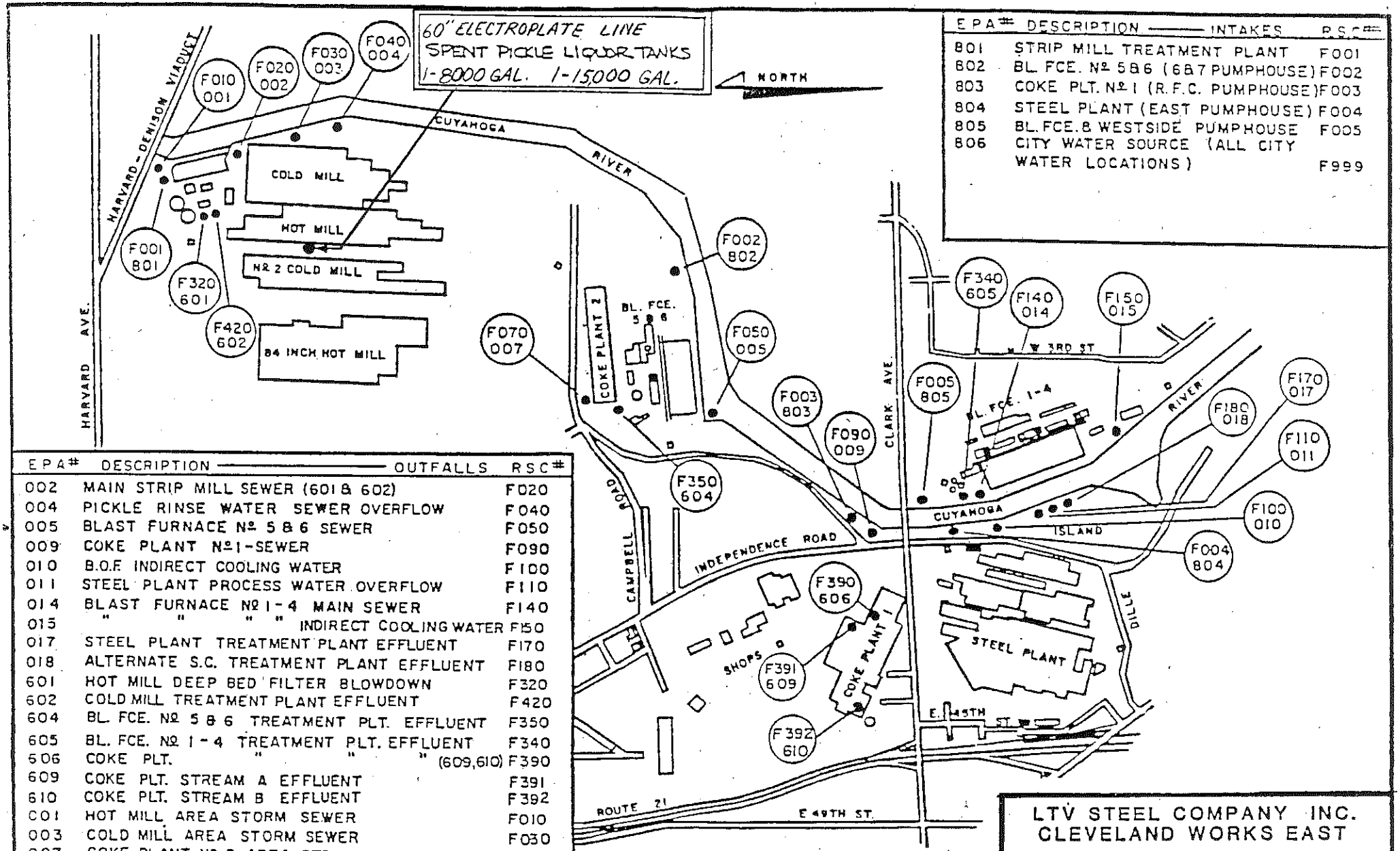
II. 60-INCH ELECTROPLATE LINE STORAGE TANK DESCRIPTION

LTV Steel Cleveland Works East (Figure 1) is an integrated steel mill with several manufacturing operations including a 60-inch electroplate line. A partial plant layout locating the 60-inch electroplate line is shown on Figure 2.

Two tanks (Part A Application line item 1, process code SO2), one 15,000-gallon and one 8,000-gallon, were utilized to store spent pickle liquor (SPL) (hazardous waste No. K062) in the vicinity of the 60-inch electroplate line (Figure 2). The two tanks were operated under federal and state RCRA permits (EPA I.D. No. OHD 004218673). The maximum potential storage capacity was 23,000 gallons.

Both tanks are mounted in a sealed concrete dike and pad outside the 60-inch electroplate line. The 15,000-gallon tank is constructed of fiberglass reinforced plastic. The 8,000-gallon tank is an elevated rubber lined steel tank. A schematic of the containment dike is shown on Figure 3. There is a trench and containment wall serving as a yard drain adjacent to the containment dike also shown on Figure 3 which drains to an NPDES treatment facility. Details of the 15,000-gallon storage tank are shown on Figure 4.

SPL is drained or pumped from the storage tanks directly into tank trucks. Rainwater or spillage from the diked area is pumped into the 15,000-gallon fiberglass tank.



EPA#	DESCRIPTION — INTAKES	RSC#
801	STRIP MILL TREATMENT PLANT	F001
802	BL. FCE. Nº 5&6 (6&7 PUMPHOUSE)	F002
803	COKE PLT. Nº 1 (R.F.C. PUMPHOUSE)	F003
804	STEEL PLANT (EAST PUMPHOUSE)	F004
805	BL. FCE. & WESTSIDE PUMPHOUSE	F005
806	CITY WATER SOURCE (ALL CITY WATER LOCATIONS)	F999

EPA#	DESCRIPTION — OUTFALLS	RSC#
002	MAIN STRIP MILL SEWER (601 & 602)	F020
004	PICKLE RINSE WATER SEWER OVERFLOW	F040
005	BLAST FURNACE Nº 5 & 6 SEWER	F050
009	COKE PLANT Nº 1-SEWER	F090
010	B.O.F. INDIRECT COOLING WATER	F100
011	STEEL PLANT PROCESS WATER OVERFLOW	F110
014	BLAST FURNACE Nº 1-4 MAIN SEWER	F140
015	" " " " INDIRECT COOLING WATER	F150
017	STEEL PLANT TREATMENT PLANT EFFLUENT	F170
018	ALTERNATE S.C. TREATMENT PLANT EFFLUENT	F180
601	HOT MILL DEEP BED FILTER BLOWDOWN	F320
602	COLD MILL TREATMENT PLANT EFFLUENT	F420
604	BL. FCE. Nº 5 & 6 TREATMENT PLT. EFFLUENT	F350
605	BL. FCE. Nº 1-4 TREATMENT PLT. EFFLUENT	F340
606	COKE PLT. " " " (609,610)	F390
609	COKE PLT. STREAM A EFFLUENT	F391
610	COKE PLT. STREAM B EFFLUENT	F392
C01	HOT MILL AREA STORM SEWER	F010
003	COLD MILL AREA STORM SEWER	F030
007	COKE PLANT Nº 2 AREA STORM SEWER	F070

M-1136-B

LTV STEEL COMPANY INC.
CLEVELAND WORKS EAST

FIGURE 2

PARTIAL PLANT LAYOUT

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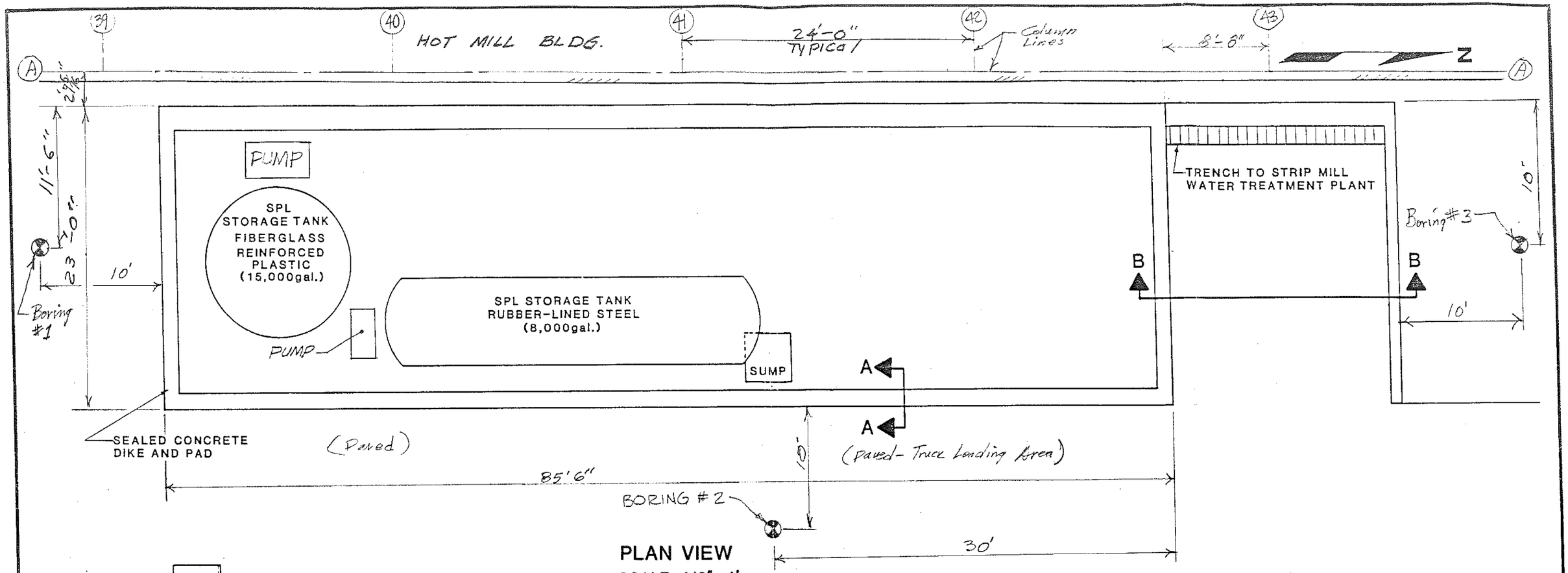
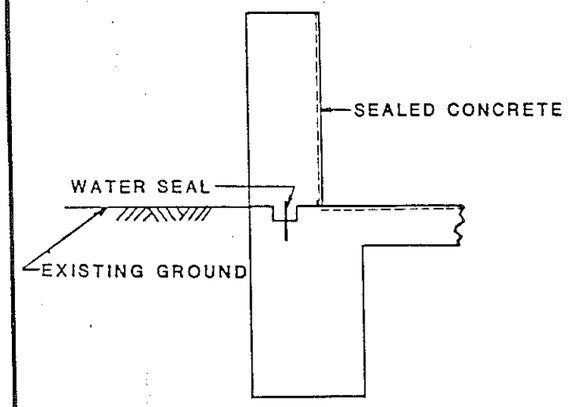
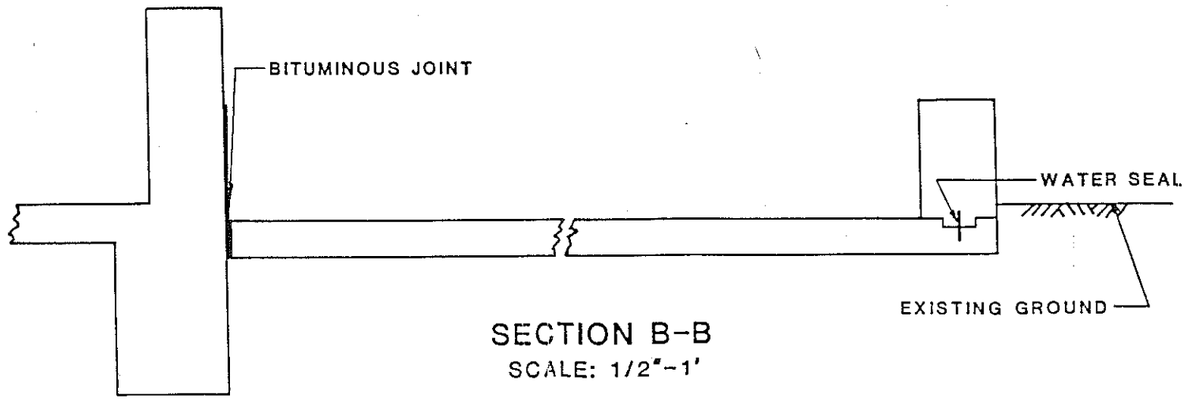


PLAN VIEW
SCALE: 1/8" 1'



SECTION A-A
SCALE: 1/2"-1'



SECTION B-B
SCALE: 1/2"-1'

NOTE: BORING LOCATION MAY BE ADJUSTED DUE TO UNDERGROUND UTILITY CONSIDERATIONS.

LTV STEEL COMPANY, INC.
CLEVELAND WORKS EAST

FIGURE 3

SCHEMATIC OF 60-INCH SPL STORAGE TANKS AND CONTAINMENT DIKE

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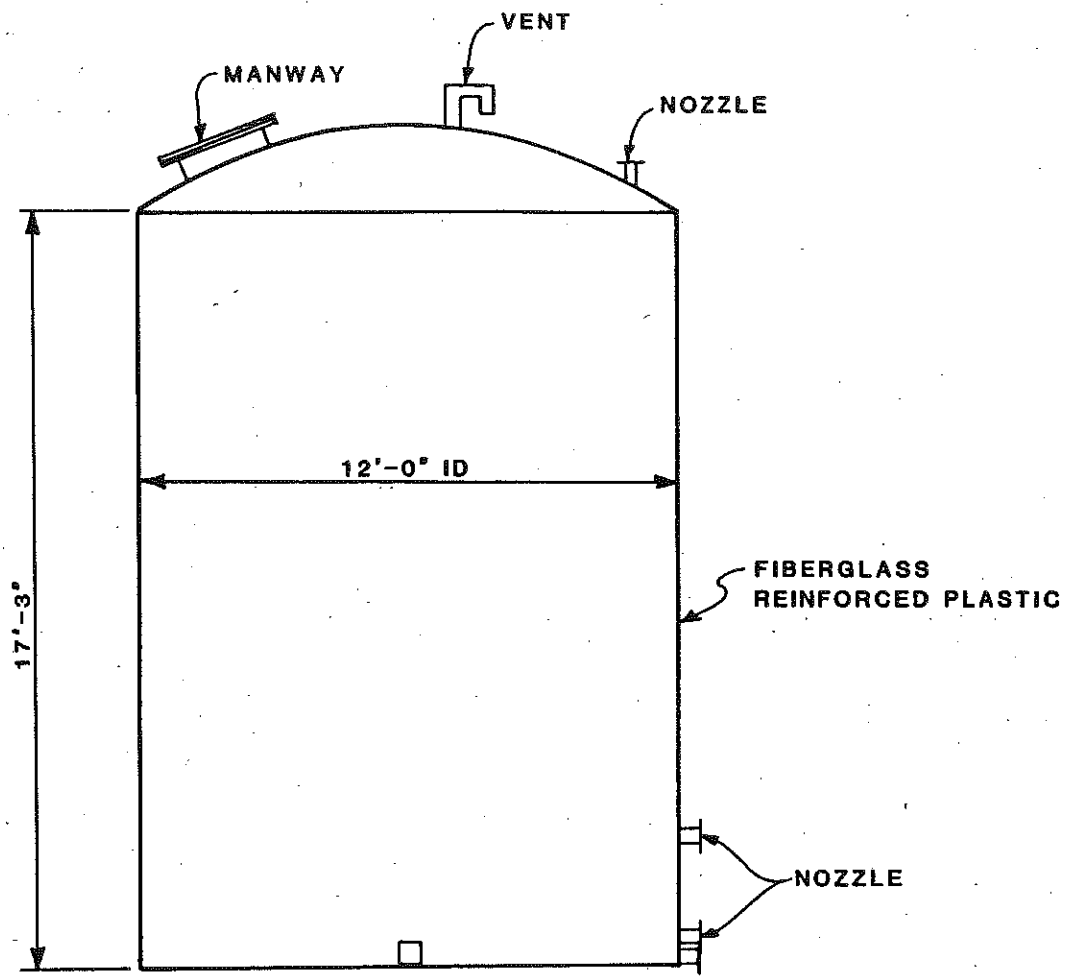
ENGINEERS & ARCHITECTS

JUNE 1988



LTV STEEL COMPANY
CLEVELAND WORKS

FIGURE 4

SCHEMATIC OF 15,000 GALLON STORAGE TANK

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ENGINEERS & ARCHITECTS

III. CLOSURE PLAN

A. General

LTV Steel plans to convert the two SPL storage tanks at the 60-inch electroplate line to less than 90 days' storage. Ohio EPA has not required LTV Steel Company to fully close the tanks since they are still utilized for storage. This closure plan establishes decontamination and closure activities, including certification, for the containment facilities, trench, soils, and subsoils at the 60-inch SPL storage tank area.

B. Closure Performance Standard

Section 3745-66-11 of the Ohio Administrative Code (OAC) states that a hazardous waste facility must be closed in a manner that minimizes the need for further maintenance and to control, minimize, or eliminate post-closure escape of hazardous waste, hazardous constituents, leachate or contaminated rainfall to the groundwater, surface water, or air.

The closure standard for the containment dike and trench will be decontamination to the following levels:

pH	6.0 - 11.0 S.U.
Total Chromium	5.0 mg/l
Total Lead	5.0 mg/l

The closure standard for soils and subsoils shall be removal of contaminated soils in the vicinity of the 60-inch SPL storage tanks to background levels of total chromium, total lead, and pH if the following levels are exceeded: 23 parts per million (ppm) of total chromium, 39 ppm of total lead, and a pH of 4.7 to 7 Standard Units (S.U.). If the subsurface material encountered at the 60-inch SPL tanks is slag fill, then the closure standard shall be removal of contaminated slag fill to the levels of total chromium, total lead, and pH observed in uncontaminated slag fill.

The closure performance standard to provide adequate protection to human health and the environment is decontamination of the associated containment dike, trench, and removal of contaminated soil or fill.

C. Decontamination

The acid resistant dike and trench will be cleaned using a high pressure steam cleaner with a water rinse followed by cleaning with a weak alkaline solution. Rinse water will be sampled and analyzed as discussed in Section IV. Contaminated rinse water shall be disposed of or managed at a suitable treatment facility.

D. Status of Facility After Closure

The two SPL storage tanks for the 60-inch electroplate line will be used for less than 90 days' storage. The containment dike and trench will be decontaminated, certified closed, and left in place. The containment dike will be visually inspected to reconfirm structural integrity. If contaminated soils or fill are removed, then the excavations will be graded and filled with clean material.

IV. SAMPLING AND ANALYSIS PLAN

A. Sample Collection - Liquid Samples

Rinse water resulting from decontamination of the containment dike and trench will be sampled and analyzed to determine the effectiveness of cleaning. Samples from each rinsing will be analyzed for pH, total chromium (Cr), and total lead (Pb). All rinse water shall be disposed or treated at a suitable facility.

Composite samples of the containment dike contents will be obtained from the containment structure or temporary holding tank; a glass bottle and stopper attached to a rod shall be used for obtaining the samples. A minimum of four composite samples from the final rinsate shall be collected and analyzed. The composite samples will be analyzed for pH, Cr, and Pb to determine the effectiveness of cleaning. Except for the final rinse, a minimum of one composited sample from each containment facility rinsing will be collected and analyzed.

The containment dike will be considered clean if: (1) concentrations of Cr and Pb do not exceed the EP toxicity limits of 5.0 mg/l for each; and (2) pH of the rinse water is between 6 and 11.0. If analyses indicate that these limits do not meet the above clean levels, then decontamination, sampling, and analysis procedures will be repeated. If the clean level is not achieved after three rinses, LTV Steel may apply for alternate concentration limits.

Composite samples of the rinse water will be obtained from the trench. A glass bottle and stopper attached to a rod shall be used for obtaining the samples. The composite samples will be analyzed for pH, Cr, and Pb to determine the effectiveness of cleaning. A minimum of four composite samples from the final rinsate shall be collected and analyzed. Except for the final rinse, a minimum of one composite sample from each trench rinsing will be collected and analyzed.

The trench will be considered "clean" if: (1) concentrations of Cr and Pb do not exceed EP toxicity limits of 5.0 mg/l for each; and (2) the pH of the rinse water is between 6 and 11.0. If analyses indicate that these limits are

not met, then trench decontamination, sampling, and analysis procedures will be repeated. If the clean level is not achieved after three rinses, LTV Steel may apply for alternate concentration limits.

The sampling device will be decontaminated after each use. Decontamination steps will consist of a water rinse, final distilled water rinse, and drying with clean paper towels.

B. **Sample Analysis - Liquid Samples**

Sample analysis procedures will be conducted in accordance with the guidelines of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, Second Edition. Table 1 summarizes the sample collection and analytical procedures for wash water samples.

Table 1

Liquid Sample Collection and Analysis Procedures
60-inch Electroplate Line SPL Facilities
LTV Steel Cleveland Works East

Type of Sample	Parameter	Container	Preservative	Analytical Procedures
Wash water	pH	100 ml, plastic	None	pH meter[1]
	Cr	250 ml, plastic	HNO_3	SW-846; 7190, 7191
	Pb	250 ml, plastic	HNO_3	SW-846; 7420, 7421

[1]Standard Methods for the Examination of Water and Wastewater, 16th Edition

C. **Soil Borings**

Three soil borings will be drilled in the vicinity of the SPL tanks to determine if SPL has been released. The borings will be located as shown on the schematic plan of the containment dike. The borings will be approximately 5 feet deep. A continuous unconsolidated split spoon sample will be collected during the drilling of each boring. Samples will be taken every 1 foot in each of the borings (a total of 15 samples) for laboratory analysis. All drilling equipment will be steam cleaned following completion of each hole to prevent cross-contamination.

The boring holes will be sealed with a bentonite slurry or concrete upon completion. Materials removed from the boring hole during drilling and sample retrieval will be placed in 55-gallon drums. If laboratory analysis indicates that the drilled material is contaminated, then the drums will be disposed of at an approved facility. Borings shall be made with caution in regard to underground utilities. No borings shall begin without approval of the Plant Engineer in regard to whether or not the location is in conflict with any underground utilities.

SPL (hazardous waste No. K062) is listed due to corrosivity, hexavalent chromium, and lead. Soil samples will be tested on a total basis for pH, total chromium, and lead.

The solid materials retrieved from the borings for analysis will be analyzed for pH with Orion Research Ionalyzer (Model 407A) or equivalent. The boring samples will then be subjected to acid digestion in accordance with "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846 Method 3010. The digestates will be analyzed by atomic absorption for chromium and lead in accordance with SW-846. Analytical methods are summarized in Table 2.

Table 2

Analytical Procedures for Solid Samples
60-inch Electroplate Line SPL Tank Area
LTV Cleveland Works East

Parameter	Analytical Method
Chromium	7190, 7191 (SW-846)
Lead	7420, 7421 (SW-846)
Digestion	3020 (SW-846)
pH	pH meter: Standard Methods for the Examination of Water and Wastewater

Samples will be delivered to the laboratory in plastic bags under chain-of-custody control. A sample chain-of-custody form is included in the Appendix of the closure plan.

If the borings encounter soil materials, then the results from the soil analysis will be compared to the range of metals and pH for Ohio farm soils (Logan and Miller, 1983). Logan and Miller have determined that the range of chromium, lead, and pH in Ohio farm soils are:

Chromium	4 - 23 ppm
Lead	9 - 39 ppm
pH	4.7 to 7 S.U.

If the upper limit for chromium (23 ppm) or lead (39 ppm) is exceeded in the soil samples or the soil pH is not between 4.7 to 7 S.U., then four background soil samples shall be obtained with the drilling rig. The background soil samples will be located within the plant limits but beyond the influence of the SPL storage tanks. The background soil samples will be collected at depths of 2 to 3 feet and analyzed on a total constituent basis for Cr, Pb, and pH (see Table 2). The analytical results for the background soil samples will be compared to the range of pH and upper limits for Cr and Pb in Ohio farm soils. The least stringent pH range and Cr and Pb concentrations between Ohio farm soils and background soils shall be the closure performance standards and shall represent clean levels of chromium, lead, and pH at the SPL tanks.

If the borings at the 60-inch SPL tanks encounter slag fill, then four samples of slag will be collected at locations beyond the influence of the SPL tanks but within the plant limits. The four slag samples will be analyzed using the methods presented in Table 2 and will represent background conditions and will be analyzed on a total constituent basis for chromium, lead, and pH. The analytical results of the four background slag samples shall be the closure performance standards and shall represent clean levels of chromium, lead, and pH for the slag fill at the SPL tanks.

Should the analytical results exceed the mean of the background soil or slag concentrations plus two standard deviations, it will be assumed that a release has occurred. Additional sampling may then be proposed to determine the extent of contamination and if a remediation plan is necessary.

D. Quality Assurance/Quality Control (QA/QC)

The analytical QA/QC procedures will be consistent with SW-846 procedures for spikes, recoveries, and duplicate runs. QA/QC documentation will be provided along with the analytical results.

E. Sample Handling

Each sample container will be identified with a sample number, location, and initials of the sampler. All samples will be stored in coolers packed with ice. Samples will be delivered to the laboratory under chain-of-custody control. Chain-of-custody documentation for each sample will be prepared.

F. Equipment Decontamination

The drilling equipment shall be decontaminated upon completion of all boring work at the SPL tanks and before the equipment is removed from the area. The equipment shall be steam cleaned with a high pressure steam jet. All adhering soil material will be cleaned off the drilling equipment. Steam cleaning will take place at the spill containment pad for the truckloading area at the 60-inch SPL tanks. Cleaning materials will be stored until it is determined whether they are contaminated or not; all contaminated materials shall be disposed of at a suitable treatment facility. All equipment which actually enters the boreholes in the vicinity of the SPL tanks will be steam cleaned after each hole is completed to prevent cross-contamination between the borings.

V. HEALTH AND SAFETY PLAN

During decontamination and sampling at the containment areas, prescribed safety and personnel protection procedures will be followed. A work area will be established and only those individuals working directly on the area closure or only those individuals and equipment necessary to maintain normal operations of the facility will be allowed access to the work area. No eating, drinking, or smoking will be permitted within the work area. A minimum of two individuals will be involved in all closure activities.

All personnel performing closure, sampling, or boring activities shall wear the following Level D protective clothing:

Chemical resistant coveralls
Chemical resistant gloves
Chemical resistant boots
Hard hat
Safety glasses with side shields.

Personnel performing high pressure cleaning of facilities shall wear the following Level C protective clothing:

Full-face, air purifying, canister equipped respirator
Chemical resistant coveralls
Chemical resistant gloves
Chemical resistant shoes/boots
Hard hat with face shield.

Prior to leaving the work area, for those individuals performing closure activities, protective clothing shall be removed and disposed of or decontaminated. Workers shall immediately wash their hands and face after removing protective clothing.

Visitors shall not be allowed in the work area.

VI. CLOSURE SCHEDULE AND CERTIFICATION

The estimated schedule for closure of the area at the 60-inch SPL tanks is presented in Table 3. Closure activities will proceed only after all approvals are obtained. All closure activities will be completed in accordance with the approved Closure Plan within 180 days after all approvals of the Closure Plan.

Table 3

Estimated Closure Schedule
60-inch Electroplate Line Tank Area
LTV Steel Cleveland Works East

Activity	Days 0	20	40	60	80	100	120	140	160	180
Closure plan approved	▲									
Bid documents	———									
Bidding		———								
Bid evaluation and contracting			———							
Contractor mobilization				—						
Decontamination					———	———				
Sampling and analyses					———	———	———			
Treatment					———	———	———	———	———	
Closure certification										———

An independent registered professional engineer and LTV Steel will certify that the tank area was closed in accordance with the approved closure plan. Certification will be submitted within 30 days after completion of closure.

VII. CLOSURE COST ESTIMATE

Estimated closure costs for the SPL 60-inch electroplate line tank area are summarized in Table 4. The closure costs are based on 1989 dollars. The estimated costs for disposal of contaminated soils or fill and confirmation sampling are not included in Table 4.

Table 4

Estimated Closure Costs
60-inch Electroplate Line SPL Tank Area
LTV Steel Cleveland Works East

Item	Quantity	Unit	Unit Price	Total Cost
Preliminary engineering and bidding services	-	l.s.	-	$11,500
Decontamination of containment dike and trench with weak alkaline solution	-	l.s.	-	7,000
Lab analysis (rinse water sample)	12	each	$ 125.00	1,500
Borings and bentonite grout	3	each	1,700.00	5,100
Slag sampling	4	each	125.00	500
Background soil sampling	4	each	1,000.00	4,000
Laboratory analysis (borings)	15	each	120.00	1,800
Slag analysis	4	each	125.00	500
Background soil analysis	4	each	125.00	500
Engineering services	-	l.s.	-	6,000
Equipment Decontamination	-	l.s.	-	3,500
Treatment of rinse waters	30,000	gals.	0.05	1,500
Certification of closure	-	l.s.	-	2,500
Subtotal				$45,900
Contingency (10 percent)				4,600
Total				$50,500

APPENDIX

BURGESS & NIPLE, LIMITED
CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
SAMPLERS: (Signature)	

STA. NO.	DATE	TIME	COMP.	DISCR.	STATION LOCATION	TOTAL NO. OF CONTAINERS							REMARKS

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Lab by: (Signature)	Date/Time	Remarks:	
				Method of shipment:	

BURGESS & NIPLE, LTD.
ENGINEERS & ARCHITECTS

5085 REED RD. COLUMBUS, OHIO 43220
TELEPHONE: (614) 459-2050

CLOSURE PLAN FOR 84-INCH PICKLE LINE STORAGE TANK AREA

CLEVELAND WORKS EAST
LTV STEEL COMPANY, INC.

(EPA I.D. NO. OHD004218673)

JUNE 1988

BURGESS & NIPLE, LIMITED
Engineers and Architects
5085 Reed Road
Columbus, OH 43220

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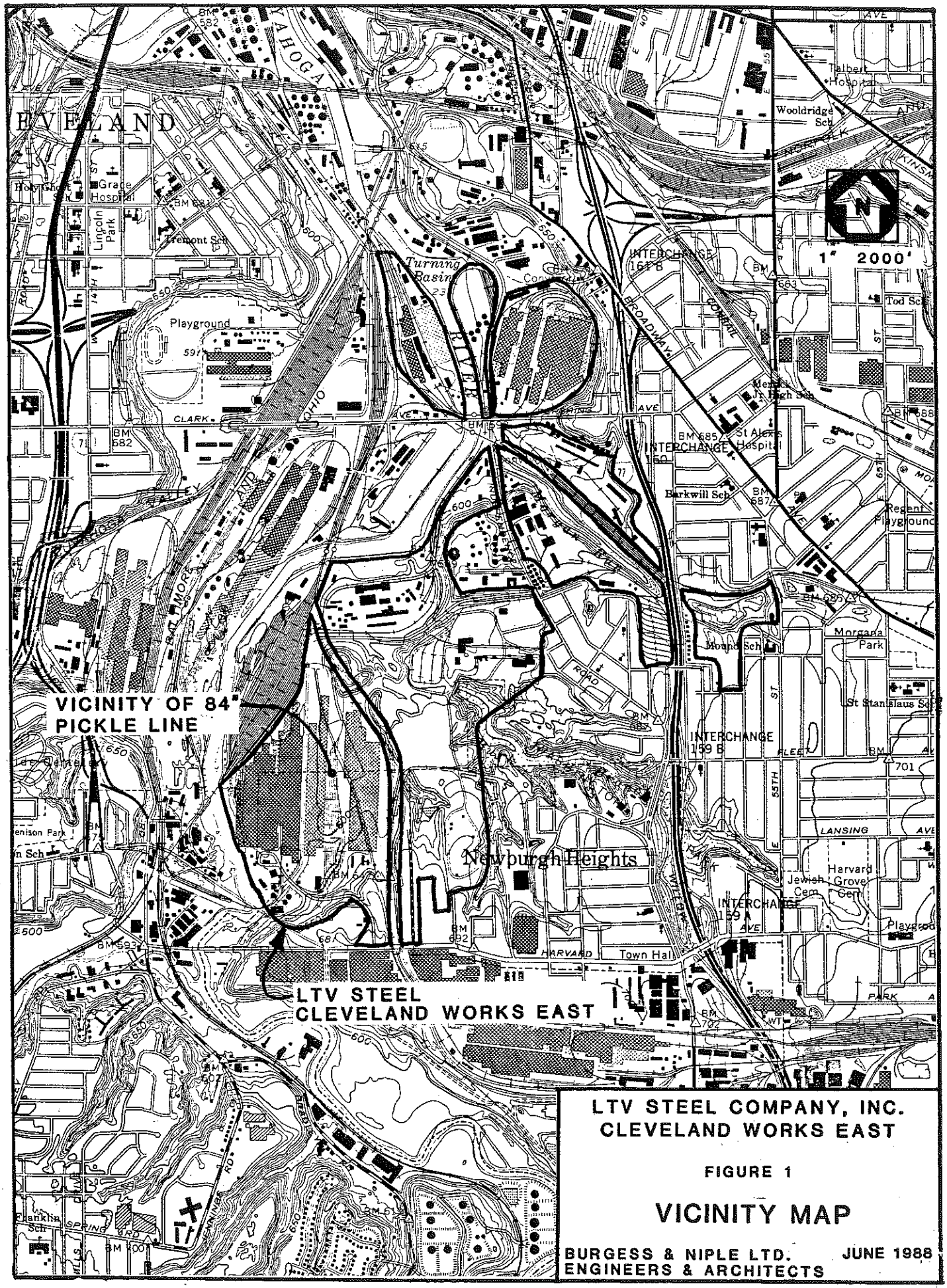
I. INTRODUCTION

The LTV Steel Company, Inc. (LTV Steel) owns and operates a steel mill on approximately 750 acres in Cleveland, Ohio called Cleveland Works East as located on Figure 1. Cleveland Works East produces flat rolled steel. Manufacturing facilities include the following: hot and cold mills, blast furnaces, coke plants, basic oxygen furnaces, hydrochloric acid (HCl) pickling, and associated finishing and shipping facilities.

LTV Steel Cleveland Works East operates several spent pickle liquor (SPL) storage facilities (Part A Application line item 1, process code S02) under federal and state Resource Conservation and Recovery Act (RCRA) permits (EPA Identification No. OHD 004218673).

On April 28, 1986, LTV Steel notified the Ohio Environmental Protection Agency (Ohio EPA) of its intent to close two 25,000-gallon storage tanks (process code S02) at the 84-inch pickle line and convert to less than 90 day storage requirements under U.S. Environmental Protection Agency (U.S. EPA) Policy 121. U.S. EPA policy was rescinded May 23, 1986; and Ohio EPA has required an approvable closure plan that documents decontamination efforts for dikes, sumps, trenches, soils, and subsoils at the 84-inch SPL (hazardous waste No. K062) storage tank area. This Closure Plan has been prepared in response to the Agency's request. The Ohio EPA determined that full closure of the 84-inch SPL tanks will not be required since LTV Steel will continue to use the tanks for less than 90 day storage of SPL.



LTV STEEL COMPANY, INC.
CLEVELAND WORKS EAST

FIGURE 1

VICINITY MAP

BURGESS & NIPLE LTD. **JUNE 1988**
ENGINEERS & ARCHITECTS

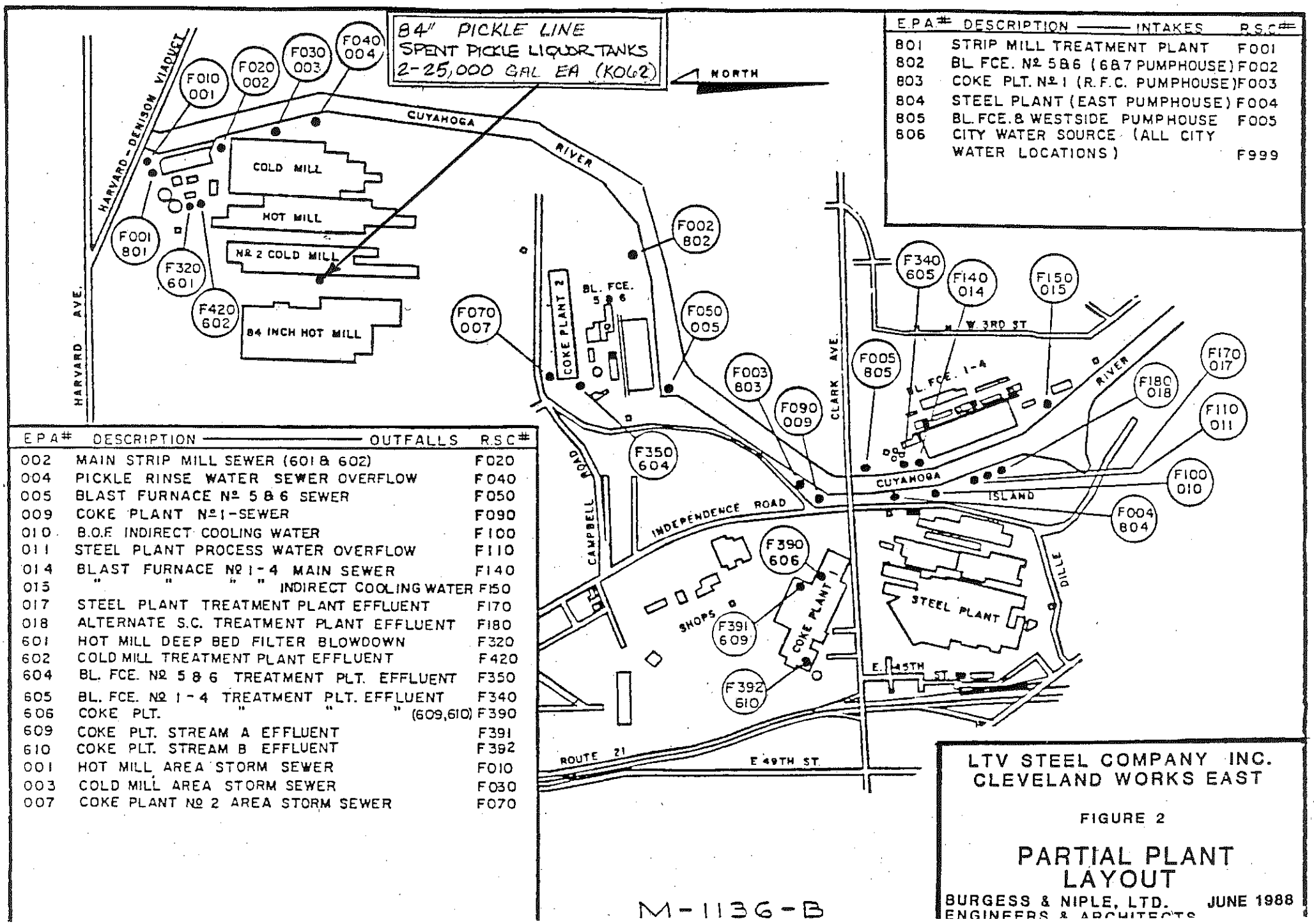
II. 84-INCH PICKLE LINE DESCRIPTION

LTV Steel Cleveland Works East as located on Figure 1 is an integrated steel mill with several manufacturing operations including an 84-inch pickle line. Vicinity of the 84-inch pickle line is shown on Figure 2.

Two fiberglass reinforced plastic (FRP) tanks, each with a capacity of 25,000 gallons, were utilized to store spent pickle liquor (SPL). The two tanks (Part A Application line item 1, process code SO2) were used to store SPL (hazardous waste No. K062) and were operated under federal and state RCRA permits (EPA I.D. No. OHD004218673). The maximum potential storage capacity was 50,000 gallons.

Details of the storage tanks and containment facilities are shown on Figures 3 and 4. The tanks are elevated and are mounted within a containment system. The dike and pad of the containment facility consist of an acid resistant brick lining with sealed joints over a bituminous layer.

SPL is drained or pumped from the storage tanks directly into tank trucks. From the yard sump, rainwater and spillage is pumped into SPL tanks. A concrete containment wall and sloped ramp (Figure 3) provides for spill containment in the vicinity of the yard sump.



EPA#	DESCRIPTION — INTAKES	R.S.C#
801	STRIP MILL TREATMENT PLANT	F001
802	BL. FCE. Nº 5&6 (687 PUMPHOUSE)	F002
803	COKE PLT. Nº 1 (R.F.C. PUMPHOUSE)	F003
804	STEEL PLANT (EAST PUMPHOUSE)	F004
805	BL. FCE. & WESTSIDE PUMPHOUSE	F005
806	CITY WATER SOURCE (ALL CITY WATER LOCATIONS)	F999

EPA#	DESCRIPTION — OUTFALLS	R.S.C#
002	MAIN STRIP MILL SEWER (601 & 602)	F020
004	PICKLE RINSE WATER SEWER OVERFLOW	F040
005	BLAST FURNACE Nº 5 & 6 SEWER	F050
009	COKE PLANT Nº 1 - SEWER	F090
010	B.O.F. INDIRECT COOLING WATER	F100
011	STEEL PLANT PROCESS WATER OVERFLOW	F110
014	BLAST FURNACE Nº 1-4 MAIN SEWER	F140
015	" " " " INDIRECT COOLING WATER	F150
017	STEEL PLANT TREATMENT PLANT EFFLUENT	F170
018	ALTERNATE S.C. TREATMENT PLANT EFFLUENT	F180
601	HOT MILL DEEP BED FILTER BLOWDOWN	F320
602	COLD MILL TREATMENT PLANT EFFLUENT	F420
604	BL. FCE. Nº 5 & 6 TREATMENT PLT. EFFLUENT	F350
605	BL. FCE. Nº 1-4 TREATMENT PLT. EFFLUENT	F340
606	COKE PLT. " " " (609,610)	F390
609	COKE PLT. STREAM A EFFLUENT	F391
610	COKE PLT. STREAM B EFFLUENT	F392
001	HOT MILL AREA STORM SEWER	F010
003	COLD MILL AREA STORM SEWER	F030
007	COKE PLANT Nº 2 AREA STORM SEWER	F070

M-1136-B

LTV STEEL COMPANY INC.
CLEVELAND WORKS EAST

FIGURE 2

PARTIAL PLANT LAYOUT

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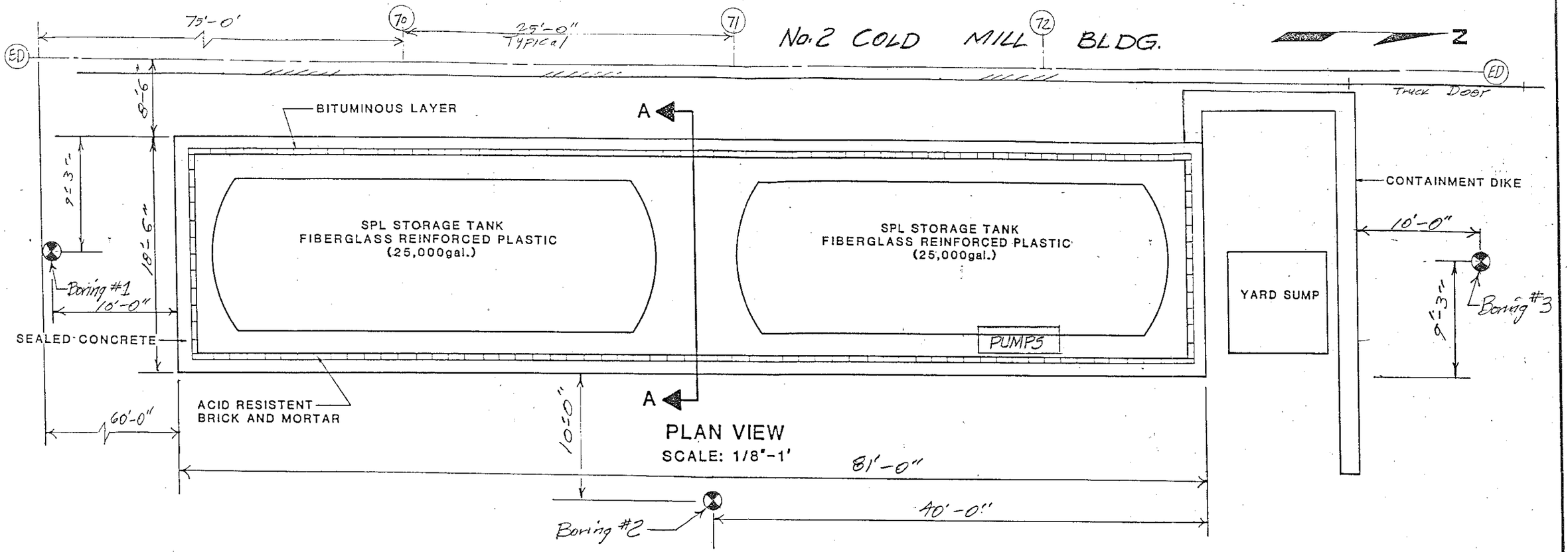

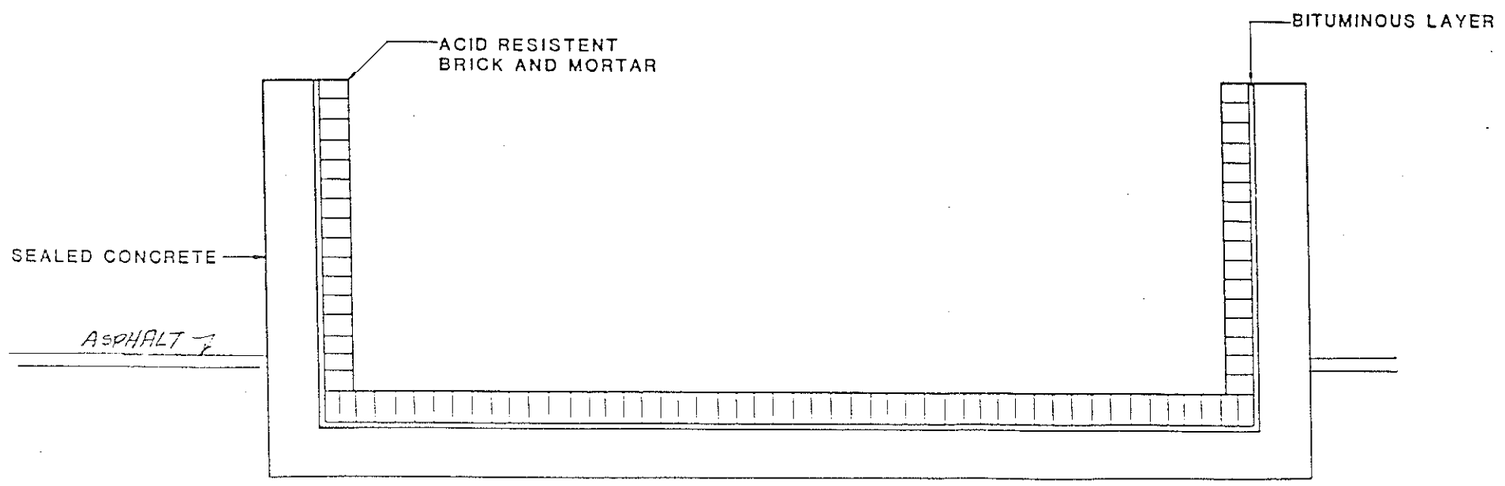

SECTION A-A
SCALE: 3/8"-1'

NOTE: BORING LOCATION MAY BE ADJUSTED DUE TO UNDERGROUND UTILITY CONSIDERATIONS.

LTV STEEL COMPANY, INC.
CLEVELAND WORKS EAST

FIGURE 3

SCHEMATIC OF 84-INCH SPL TANKS AND CONTAINMENT DIKE

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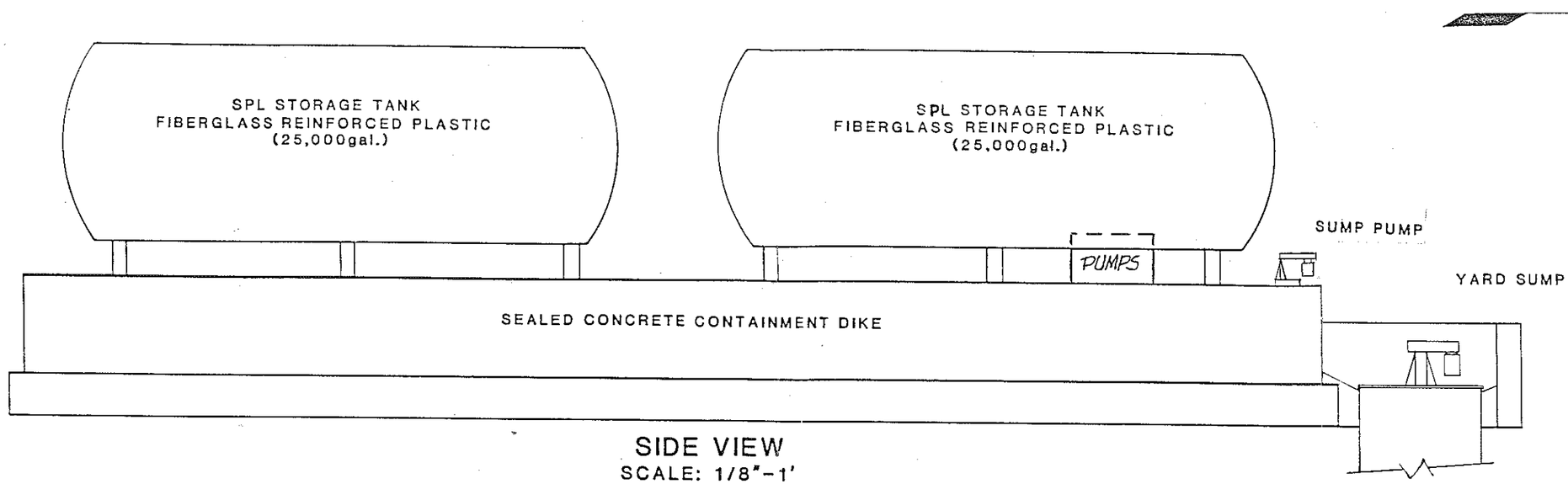
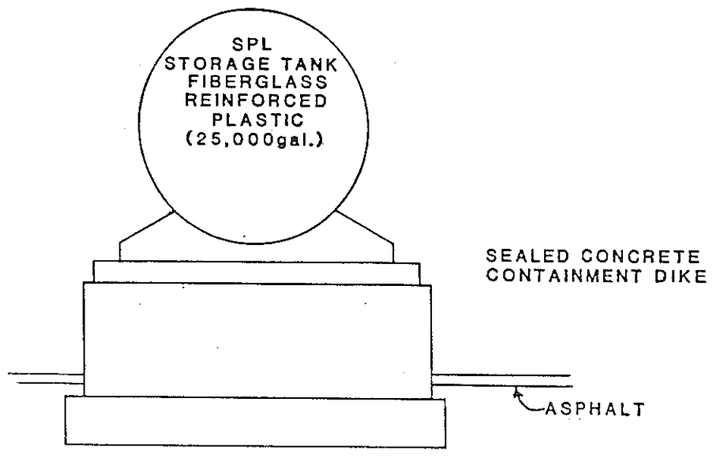
ENGINEERS & ARCHITECTS

JUNE 1988



SIDE VIEW
SCALE: 1/8"-1'



END VIEW
SCALE: 1/8"-1'

LTV STEEL COMPANY, INC.
CLEVELAND WORKS EAST

FIGURE 4

SCHEMATIC OF 84" SPL STORAGE TANKS

BURGESS & NIPLE, LTD.
ENGINEERS & ARCHITECTS

JUNE 1988

III. CLOSURE PLAN

A. General

LTV Steel plans to convert the two SPL storage tanks for the 84-inch pickle line to less than 90 days' storage. Ohio EPA has not required LTV Steel Company to fully close the tanks since they are still utilized for storage. This closure plan establishes decontamination and closure activities, including certification, for the associated containment facilities, sumps, soils, and subsoils at the 84-inch SPL storage tank area.

B. Closure Performance Standard

Section 3745-66-11 of the Ohio Administrative Code (OAC) states that a hazardous waste facility must be closed in a manner that minimizes the need for further maintenance and to control, minimize, or eliminate post-closure escape of hazardous waste, hazardous constituents, leachate or contaminated rainfall to the groundwater, surface water, or air.

The closure standard for the containment facilities and sumps will be decontamination to the following levels:

pH	6.0 - 11.0 S.U.
Total Chromium	5.0 mg/l
Total Lead	5.0 mg/l

The closure standard for soils and subsoils shall be removal of contaminated soils in the vicinity of the 84-inch SPL storage tanks to background levels of total chromium, total lead, and pH if the following levels are exceeded: 23 parts per million (ppm) of total chromium, 39 ppm of total lead, and a pH of 4.7 to 7 Standard Units (S.U.). If the subsurface material encountered at the 84-inch SPL tanks is slag fill, then the closure standard shall be removal of contaminated slag fill to the levels of total chromium, total lead, and pH observed in uncontaminated slag fill.

The closure performance standard to provide adequate protection to human health and the environment is decontamination of the associated containment facilities and sumps and removal of contaminated soil or fill.

C. Decontamination

The acid resistant dike and sump will be cleaned using a high pressure steam cleaner with a water rinse followed by cleaning with a weak alkaline solution. Rinse water will be sampled and analyzed as discussed in Section IV. Contaminated rinse water shall be managed and disposed at a suitable treatment facility.

D. Status of Facility After Closure

The two SPL storage tanks for the 84-inch pickle line will be used for less than 90 days' storage. The containment facility and sump will be decontaminated, certified closed, and left in place. After cleaning, containment facilities will be visually inspected to reconfirm structural integrity. If contaminated soils or fill are removed, then the excavations will be graded and filled with clean material.

IV. SAMPLING AND ANALYSIS PLAN

A. Sample Collection - Liquid Samples

Rinse water resulting from decontamination of the containment facilities and sump will be sampled and analyzed to determine the effectiveness of cleaning. Samples will be analyzed for pH, total chromium (Cr), and total lead (Pb). All rinse waters shall be disposed or treated at a suitable facility.

Composite samples of the containment dike contents will be obtained from the containment structure or temporary holding tank. A glass bottle and stopper attached to a rod shall be used for obtaining the samples. A minimum of four composite samples from the final rinsate shall be collected and analyzed. The composite samples will be analyzed for pH, Cr, and Pb to determine the effectiveness of cleaning. Except for the final rinse a minimum of one composite sample from each containment facility rinsing will be collected and analyzed.

The containment dike will be considered clean if: (1) concentrations of Cr and Pb do not exceed the EP toxicity limits of 5.0 mg/l each; and (2) the pH of the rinse water is between 6 and 11.0. If analyses indicate that these limits do not meet the above clean levels, then decontamination, sampling, and analysis procedures will be repeated. If the clean level is not achieved after three rinses, LTV Steel may apply for alternate concentration limits.

Composite samples of the rinse water will be obtained from the sump. A glass bottle and stopper attached to a rod shall be used for obtaining the samples. The composite samples will be analyzed for pH, Cr, and Pb to determine the effectiveness of cleaning. A minimum of four composite samples from the final rinsate shall be collected and analyzed. Except for the final rinse, a minimum of one composite sample from sump rinsing will be collected and analyzed.

The sump will be considered clean if: (1) concentrations of chromium and lead do not exceed the EP toxicity limits of 5.0 mg/l for each; and (2) pH of the rinse water is between 6 and 11.0. If analyses indicate that these limits

do not meet the above clean levels, then decontamination, sampling, and analysis procedures will be repeated. If the clean level is not achieved after three rinses, LTV Steel may apply for alternate concentration limits.

The sampling device will be decontaminated after each use. Decontamination steps will consist of a water rinse, final distilled water rinse, and drying with clean paper towels.

B. **Sample Analysis - Liquid Samples**

Sample analysis procedures will be conducted in accordance with the guidelines of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, Second Edition. Table 1 summarizes the sample collection and analytical procedures for wash water samples.

Table 1

Liquid Sample Collection and Analysis Procedures
84-inch SPL Facilities
LTV Steel Cleveland Works East

Type of Sample	Parameter	Container	Preservative	Analytical Procedures
Wash water	pH	100 ml, plastic	None	pH meter[1]
	Cr	250 ml, plastic	HNO_3	SW-846; 7190, 7191
	Pb	250 ml, plastic	HNO_3	SW-846; 7420, 7421

[1]Standard Methods for the Examination of Water and Wastewater, 16th Edition

C. **Soil Borings**

Three soil borings will be drilled in the vicinity of the SPL tanks outside of the containment dike and sump to determine if SPL has been released. The borings will be located as shown on the schematic plan of the containment dike. The borings will be approximately 5 feet deep. A continuous unconsolidated split spoon sample will be collected during the drilling of each boring. Samples will be taken every 1 foot in each of the

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Should the analytical results exceed the mean of the background soil or slag concentrations plus two standard deviations, it will be assumed that a release has occurred. Additional sampling may then be proposed to determine the extent of contamination and if a remediation plan is necessary.

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The drilling equipment shall be decontaminated upon completion of all boring work at the SPL tanks and before the equipment is removed from the area. The equipment shall be steam cleaned with a high pressure steam jet. All adhering soil material will be cleaned off the drilling equipment. Steam cleaning will take place at the spill containment pad for the truckloading area at the 84-inch SPL tanks. Cleaning materials will be properly stored until it is determined whether they are contaminated or not; all contaminated materials shall be managed and disposed of at a suitable treatment facility. All equipment which actually enters the boreholes in the vicinity of the SPL tanks will be steam cleaned after each hole is completed to prevent cross-contamination between the borings.

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Chemical resistant boots
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Personnel performing high pressure cleaning of facilities shall wear the following Level C protective clothing:

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Chemical resistant coveralls
Chemical resistant gloves
Chemical resistant shoes/boots
Hard hat with face shield.

Prior to leaving the work area, for those individuals performing closure activities, protective clothing shall be removed and disposed of or decontaminated. Workers shall immediately wash their hands and face after removing protective clothing.

Visitors shall not be allowed in the work area.

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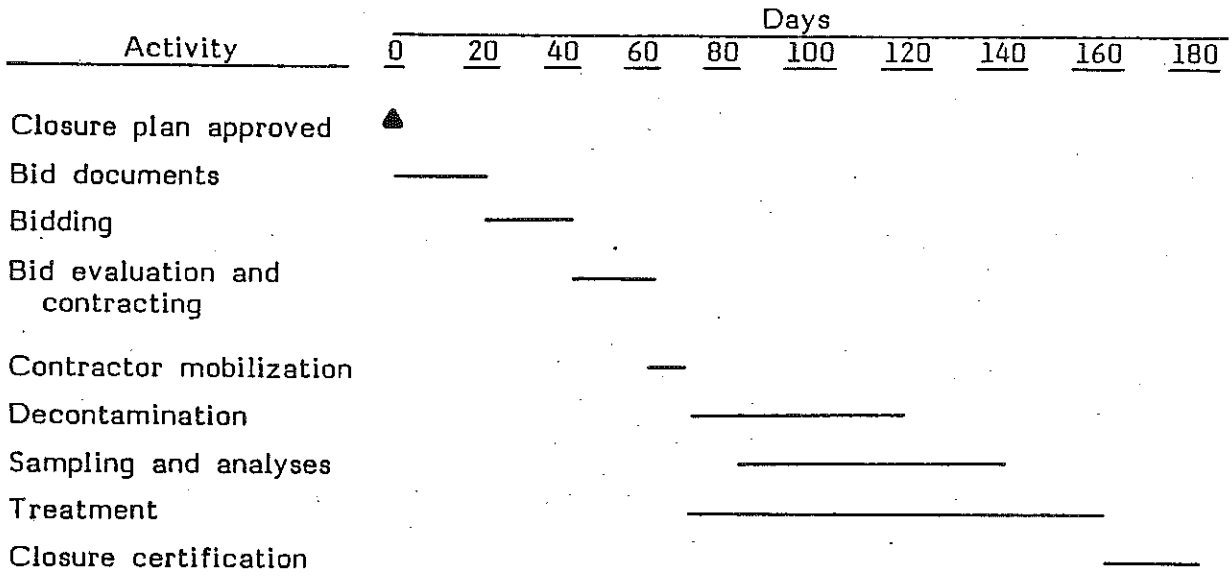

An independent registered professional engineer and LTV Steel will certify that the tank area was closed in accordance with the approved closure plan. Certification will be submitted within 30 days after completion of closure.

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Item	Quantity	Unit	Unit Price	Total Cost
Preliminary engineering and bidding services	-	l.s.	-	$11,500
Decontamination of containment facilities and sump with weak alkaline solution	-	l.s.	-	7,000
Lab analysis (wash water composite)	12	each	$ 125.00	1,500
Borings and grout	3	each	1,700.00	5,100
Slag sampling	4	each	125.00	500
Background soil sampling	4	each	1,000.00	4,000
Laboratory analysis (borings)	15	each	120.00	1,800
Slag analysis	4	each	125.00	500
Background soil analysis	4	each	125.00	500
Engineering services	-	l.s.	-	6,000
Equipment Decontamination	-	l.s.	-	3,500
Treatment of rinse waters	30,000	gals.	0.05	1,500
Certification of closure	-	l.s.	-	2,500
Subtotal				$45,900
Contingency (10 percent)				4,600
Total				$50,500

APPENDIX

BURGESS & NIPLE, LIMITED
CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
SAMPLERS: (Signature)	

STA. NO.	DATE	TIME	COMP.	DISCR.	STATION LOCATION	TOTAL NO. OF CONTAINERS							REMARKS

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Lab by: (Signature)	Date/Time	Remarks:	
				Method of shipment:	

BURGESS & NIPLE, LTD.
ENGINEERS & ARCHITECTS

5085 REED RD. COLUMBUS, OHIO 43220
TELEPHONE: (614) 459-2050

CLOSURE PLAN FOR 98-INCH PICKLE LINE STORAGE TANKS

CLEVELAND WORKS EAST
LTV STEEL COMPANY, INC.

(EPA I.D. NO. OHD004218673)

JANUARY 1987

BURGESS & NIPLE, LIMITED
Engineers and Architects
5085 Reed Road
Columbus, OH 43220

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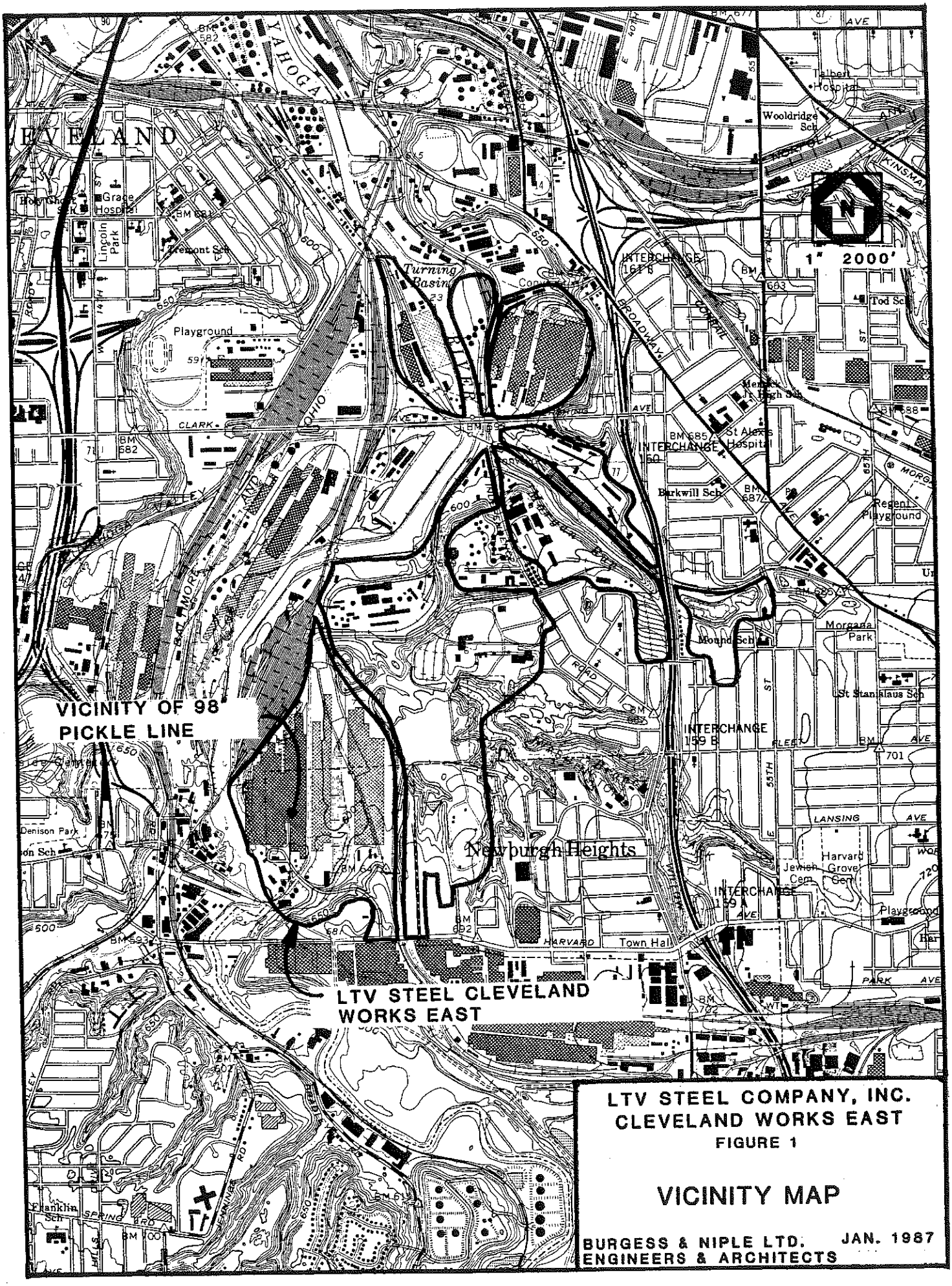
I. INTRODUCTION

The LTV Steel Company, Inc. (LTV Steel) owns and operates a steel mill on approximately 750 acres in Cleveland, Ohio called Cleveland Works East as located on Figure 1. Cleveland Works East produces flat rolled steel. Manufacturing facilities include the following: hot and cold mills, blast furnaces, coke plants, basic oxygen furnaces, hydrochloric acid (HCl) pickling, and associated finishing and shipping facilities.

LTV Steel Cleveland Works East operates spent pickle liquor (SPL) storage facilities (process code SO2) under federal and state Resource Conservation and Recovery Act (RCRA) permits (EPA Identification No. OHD 004218673).

On April 28, 1986, LTV Steel submitted a closure plan for the three storage tanks at the 98-inch pickle line (process code SO2) since the tanks were no longer used for storage of SPL. On November 4, 1986, the Ohio Environmental Protection Agency (Ohio EPA) requested additional information and an approvable closure plan. This Closure Plan for the 98-inch pickle line storage facilities has been prepared in response to the Agency's request.



LTV STEEL COMPANY, INC.
CLEVELAND WORKS EAST
FIGURE 1

VICINITY MAP

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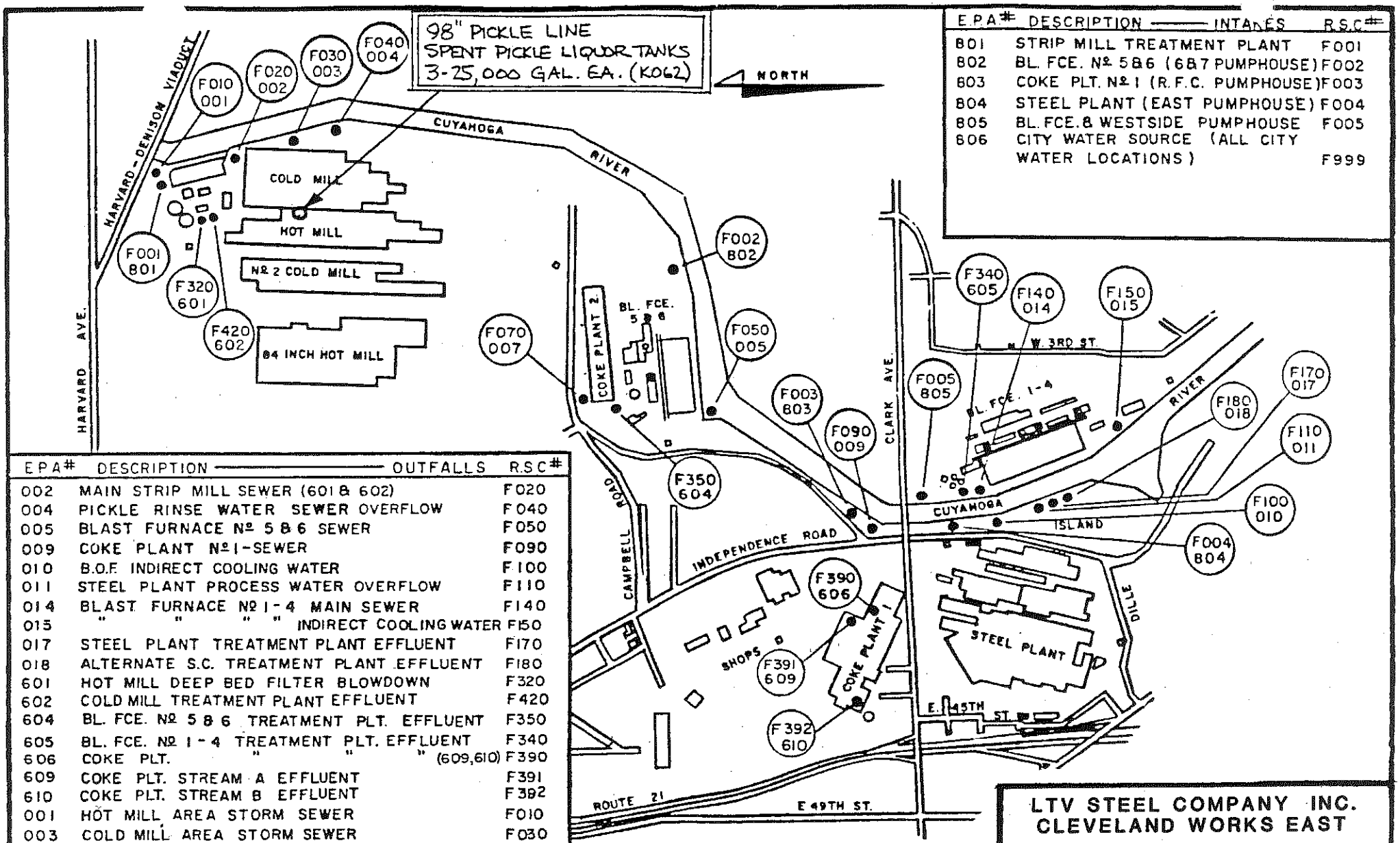
II. 98-INCH PICKLE LINE DESCRIPTION

LTV Steel Cleveland Works East as located on Figure 1 is an integrated steel mill with several manufacturing operations including a decommissioned 98-inch pickle line. The 98-inch pickle line storage tanks are shown on Figure 2, Partial Plant Layout.

Three rubber-lined steel tanks, each with a capacity of 25,000 gallons, were utilized to store spent hydrochloric acid pickle liquor (SPL). The maximum potential storage capacity was 75,000 gallons. The three tanks (process code SO2) were used to store SPL (hazardous waste No. K062) and were operated under federal and state RCRA permits (EPA I.D. No. OHD004218673).

The tanks are mounted on a sealed and coated diked concrete pad within a roofed building. A schematic of the storage tanks and dike is shown on Figure 3. The pumps for pumping SPL from the tanks are mounted in a sealed concrete pad and dike as shown on Figure 3.

Operations at the 98-inch pickle line were suspended in July 1984. The tanks are presently empty.



E.P.A.#	DESCRIPTION — INTAKES	R.S.C.#
801	STRIP MILL TREATMENT PLANT	F001
802	BL. FCE. № 5 & 6 (6 & 7 PUMPHOUSE)	F002
803	COKE PLT. № 1 (R.F.C. PUMPHOUSE)	F003
804	STEEL PLANT (EAST PUMPHOUSE)	F004
805	BL. FCE. & WESTSIDE PUMPHOUSE	F005
806	CITY WATER SOURCE (ALL CITY WATER LOCATIONS)	F999

E.P.A.#	DESCRIPTION — OUTFALLS	R.S.C.#
002	MAIN STRIP MILL SEWER (601 & 602)	F020
004	PICKLE RINSE WATER SEWER OVERFLOW	F040
005	BLAST FURNACE № 5 & 6 SEWER	F050
009	COKE PLANT № 1 - SEWER	F090
010	B.O.F. INDIRECT COOLING WATER	F100
011	STEEL PLANT PROCESS WATER OVERFLOW	F110
014	BLAST FURNACE № 1-4 MAIN SEWER	F140
015	" " " " INDIRECT COOLING WATER	F150
017	STEEL PLANT TREATMENT PLANT EFFLUENT	F170
018	ALTERNATE S.C. TREATMENT PLANT EFFLUENT	F180
601	HOT MILL DEEP BED FILTER BLOWDOWN	F320
602	COLD MILL TREATMENT PLANT EFFLUENT	F420
604	BL. FCE. № 5 & 6 TREATMENT PLT. EFFLUENT	F350
605	BL. FCE. № 1-4 TREATMENT PLT. EFFLUENT	F340
606	COKE PLT. " " " (609,610)	F390
609	COKE PLT. STREAM A EFFLUENT	F391
610	COKE PLT. STREAM B EFFLUENT	F392
001	HOT MILL AREA STORM SEWER	F010
003	COLD MILL AREA STORM SEWER	F030
007	COKE PLANT № 2 AREA STORM SEWER	F070

M-1136-B

LTV STEEL COMPANY INC.
CLEVELAND WORKS EAST

FIGURE 2

PARTIAL PLANT LAYOUT

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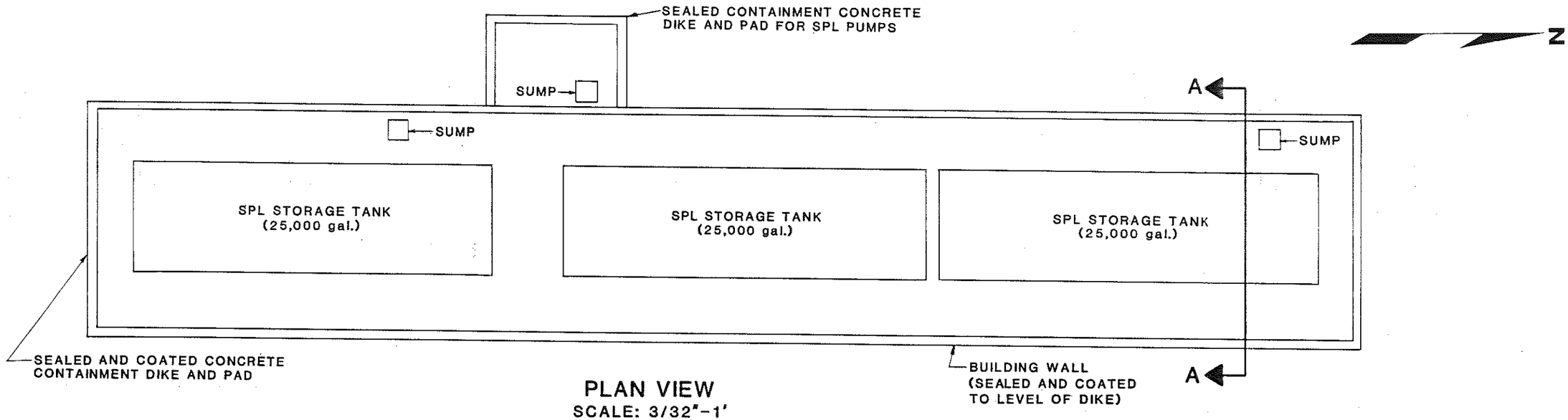
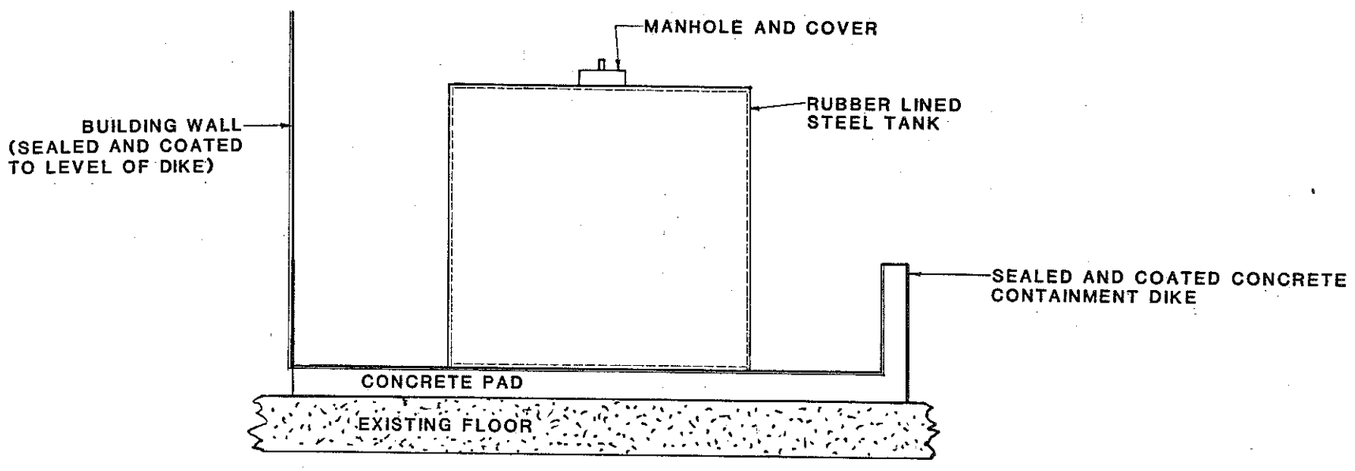


PLAN VIEW
SCALE: 3/32"-1'



SECTION A-A
SCALE: 3/16"-1'

LTV STEEL COMPANY INC
CLEVELAND WORKS EAST

FIGURE 3

SCHEMATIC OF STORAGE TANKS AND CONTAINMENT FACILITIES

BURGESS & NIPLE, LTD.
ENGINEERS & ARCHITECTS

JAN. 1987

III. CLOSURE PLAN

A. General

LTV Steel plans to close the three SPL storage tanks for the 98-inch pickle line. After closure certification, the tanks will not be used for hazardous waste storage and will be left in place.

B. Closure Performance Standard

Section 3745-66-11 of the Ohio Administrative Code (OAC) states that a hazardous waste facility must be closed in a manner that minimizes the need for further maintenance and to control, minimize, or eliminate post-closure escape of hazardous waste, hazardous constituents, leachate or contaminated rainfall to the groundwater, surface water, or air.

SPL from the 98-inch pickle line was stored in three rubber-lined steel tanks on a diked concrete pad in an enclosed building. The tanks were not exposed to rain and are in good structural condition.

The sealed and coated concrete dike and pad provided secondary containment for a potential release of SPL from the storage tanks in the unlikely event of overfill or a leak. Even if a release from a tank through the rubber lining had occurred, the released material would have been contained by the dike and concrete flooring. The chance of a release of potential hazardous constituents from a contained spill through the concrete to the environment is considered remote.

Soil borings are not necessary at the 98-inch pickle line for the above reasons. It is considered impractical to drill through the concrete floor of a roofed building at a steel mill to establish background and vicinity soil quality.

The closure performance standard to provide adequate protection to human health and the environment is removal of the hazardous waste (SPL) from the tanks and decontamination of the tanks, associated piping, and containment structures.

C. Decontamination

Operations at the 98-inch mill were suspended in July 1984. In November 1985, a maximum of 75,000 gallons of SPL were sent to a regeneration facility at LTV Steel's plant in Warren, Ohio. The tanks were then rinsed with water. Rinses were sent to an on-site water treatment plant at the strip mill operating under a National Pollutant Discharge Elimination System (NPDES) permit. The filling and pumping process continued until the pH of the rinse water was greater than 7.0 S.U. The three tanks are now empty.

The inlet pipes to the SPL storage tanks will be cleaned with a high pressure spray cleaner using a water rinse followed by an alkaline solution. Rinse water will drain to the SPL tanks and will be sampled and analyzed as discussed in Section IV. The rinse water will be sent to the strip mill water treatment plant.

The storage tanks will be cleaned using a high pressure steam cleaner with a water rinse followed by a weak alkaline solution. The containment dikes and concrete pads for the SPL storage tanks and pumps will be cleaned using the same method. Rinse water will be sampled and analyzed as discussed in Section IV. The rinse water will be sent to the strip mill water treatment plant.

D. Status of Facility After Closure

After cleaning, the tanks and the containment dike will be visually inspected to reconfirm structural integrity. Upon completion of decontamination efforts, the SPL tanks will be certified closed and left in place intact. The SPL tanks will not be utilized for the storage of hazardous wastes.

IV. SAMPLING AND ANALYSIS PLAN

A. Sample Collection

Rinse water resulting from decontamination of the SPL storage tanks, inlet pipes, and containment facilities will be sampled and analyzed to determine the effectiveness of cleaning. Samples will be analyzed for pH, total chromium (Cr), and total lead (Pb).

During cleaning of each inlet pipe, four grab samples will be collected of the rinse water as it discharges to the SPL storage tanks. The samples will be composited into one sample per inlet pipe which will be analyzed for the parameters identified above.

The inlet lines will be considered "clean" if: (1) concentrations of Cr and Pb do not exceed the Extraction Procedure (EP) toxicity limits of 5.0 milligrams per liter (mg/l) for each; and (2) pH of the rinse water is between 6 and 9. If analyses indicate that these limits are not met, the inlet line decontamination, sampling, and analysis procedures will be repeated.

Rinse water collected in each SPL storage tank will be sent to the strip mill water treatment plant. A vertically composited sample of the rinse water in each SPL tank will be obtained using a glass bottle and stopper attached to a rod. The composite sample will be analyzed for pH, Cr, and Pb to determine the effectiveness of cleaning.

The tanks will be considered "clean" if: (1) concentrations of Cr and Pb do not exceed the EP toxicity limits of 5.0 mg/l for each; and (2) pH of the rinse water is between 6 and 9. If analyses indicate that these limits are not met, the tank decontamination, sampling, and analysis procedures will be repeated.

Rinse water collected in the concrete containment dike from the spray cleaning will be sent to the strip mill water treatment plant. A composite sample of the dike rinse will be obtained using a glass bottle. The composite

sample will be analyzed for pH, Cr, and Pb to determine the effectiveness of cleaning. Sampling of the containment dike for the SPL pumps will be completed in the same manner.

The containment facilities for the tanks and SPL pumps will be considered "clean" if: (1) concentrations of Cr and Pb do not exceed the EP toxicity limits of 5.0 mg/l for each; and (2) pH of the rinse water is between 6 and 9. If analyses indicate that these limits are not met, the containment decontamination, sampling, and analysis procedures will be repeated.

The sampling device will be decontaminated after each use. Decontamination steps will consist of a water rinse, final distilled water rinse, and drying with clean paper towels.

B. Sample Analysis

Sample analysis procedures will be conducted in accordance with the guidelines of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, Second Edition. Table 1 summarizes the sample collection and analytical procedures for rinse water samples.

Table 1

Sample Collection/Analysis Procedures
LTV Steel Cleveland Works East

Type of Sample	Parameter	Container	Preservative	Analytical Procedures
Wash water	pH	100 ml, plastic	None	pH meter[1]
	Cr	250 ml, plastic	HNO_3	SW-846; 7190, 7191
	Pb	250 ml, plastic	HNO_3	SW-846; 7420, 7421

[1]Standard Methods for the Examination of Water and Wastewater, 16th Edition

C. Quality Assurance/ Quality Control (QA/QC)

The analytical QA/QC procedures will be consistent with SW-846 procedures for spikes, recoveries, and duplicate runs. QA/QC documentation will be provided along with the analytical results.

D. Sample Handling

Each sample container will be identified with a sample number, location, and initials of the sampler. All samples will be stored in coolers packed with ice. Samples will be delivered to the laboratory under chain-of-custody control.

Chain-of-custody documentation for each sample will be prepared. A typical chain-of-custody form is included in the Appendix.

V. HEALTH AND SAFETY PLAN

During decontamination and sampling at the SPL storage tanks, prescribed safety and personnel protection procedures will be followed. A work area will be established and only those individuals working directly on the tank closure will be allowed access to the work area. No eating, drinking, or smoking will be permitted within the work area. A minimum of two individuals will be involved in all closure activities.

All personnel performing closure or sampling activities shall wear the following Level D protective clothing:

Chemical resistant coveralls
Chemical resistant gloves
Chemical resistant boots
Hard hat
Safety glasses with side shields.

Personnel performing high pressure cleaning of facilities shall wear the following Level C protective clothing:

Full-face, air purifying, canister equipped respirator
Chemical resistant coveralls
Chemical resistant gloves
Chemical resistant shoes/boots
Hard hat with face shield.

Prior to leaving the work area, protective clothing shall be removed and disposed of or decontaminated. Workers shall immediately wash their hands and face after removing protective clothing.

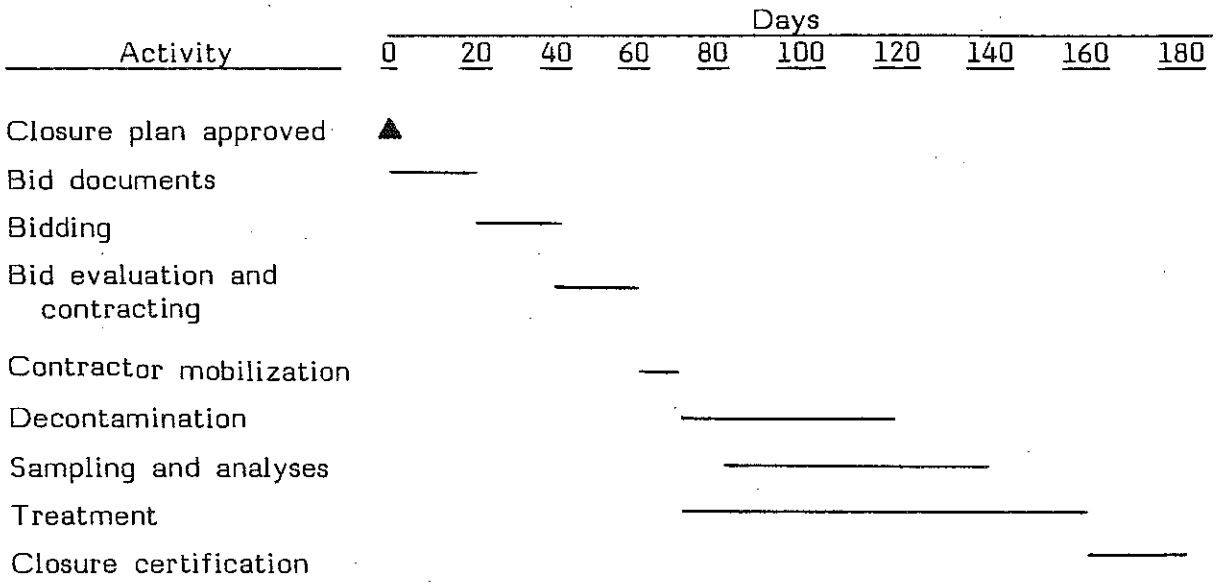
Visitors shall not be allowed in the work area.

VI. CLOSURE SCHEDULE AND CERTIFICATION

The estimated schedule for closure of the SPL storage tanks is presented in Table 2. Closure activities will proceed when the Closure Plan has been approved by U.S. EPA and Ohio EPA. All closure activities will be completed in accordance with the approved Closure Plan within 180 days after the Director's approval of the Closure Plan.

Table 2

Estimated Closure Schedule
98-inch Pickle Line Storage Tanks
LTV Steel Cleveland Works East



An independent registered professional engineer and LTV Steel will certify that the storage tanks are closed in accordance with the approved closure plan. Certification will be submitted to Region V, U.S. EPA, and Ohio EPA within 30 days after completion of closure activities.

VII. CLOSURE COST ESTIMATE

Estimated closure costs for the SPL storage tanks are summarized in Table 3. The closure costs are based on 1987 dollars.

Table 3

Estimated Closure Costs
98-inch Pickle Line Storage Tanks
LTV Steel Cleveland Works East

Item	Quantity	Unit	Unit Price	Total Cost
Preliminary engineering and bidding services	-	l.s.	-	$ 6,000
Inlet pipe decontamination	-	l.s.	-	500
Tank decontamination	-	l.s.	-	5,000
Containment structure decontamination	-	l.s.	-	1,000
Rinse water sampling/analysis	8	ea.	$200.00	1,600
Treatment of rinse water	30,000	gal.	0.05	1,500
Engineering services	-	l.s.	-	5,000
Certification of closure	-	l.s.	-	2,000
Subtotal				$22,600
Contingency (10 percent)				2,300
Total				$24,900

APPENDIX

BURGESS & NIPLE, LIMITED
CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
SAMPLERS: (Signature)	

STA. NO.	DATE	TIME	COMP.	DISCR.	STATION LOCATION	TOTAL NO. OF CONTAINERS							REMARKS

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Lab by: (Signature)	Date/Time	Remarks:	
				Method of shipment:	